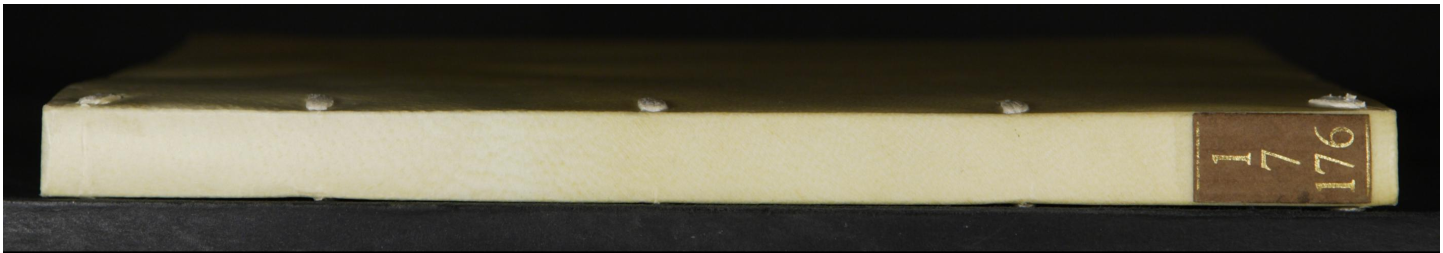
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XI

PORT. Elem.

Curvil.

IO. BAPTISTAE PORTAE
NEAPOLITANI
ELEMENTORVM CVRVILINEORVM
LIBRI TRES.

In quibus altera Geometriæ parte restituta, agitur de
CIRCVLI QVADRATVRA.

Ad Illustrissimum Principem ac D.
D. FEDERICVM CAESIVM
MONTIS CAELII MARCHION. II. &c.
BARONEM ROMANVM.

ROMAE,
Apud Bartholomæum Zannettum. M. DC. X.

SVPERIORVM PERMISSV.

Imprimatur ſi videbitur R. P. M. Sac. Pal. Apoſt.
Cæſar Fidelis Viceſg.

Libri tres Elementorum Curuilineorum Perilluſtris & Excellentiſſimi D. Ioannis Baptiſtæ Portæ Neapolitani, ex ordine Reuerendiſſimi P. Magiſtri F. Ludouici Yſtella Sacri Palatij Apoſtolici Magiſtri perlegi, eoſque cum nihil fidei, vel moribus aduerſum continere inuenerim typis dignos exiſtimaui. Romæ Die 20. Iulij 1610.

Antonius Butius Fauentinus Ciuis Romanus Philoſophiæ & Medicinæ Doctor.

Imprimatur. Fr. Damianus à Fonſeca magiſter, & Socius Reuerendiſſimi P. Magiſtri Fr. Ludouici Yſtella, ſacri Palatij Apoſtolici Magiſtri, Ordinis Prædicatorum.

In Clarissimum ac Doctissimum Virum

IO. BAPTIST. PORTAM NEAP. LYN.

& in librum de Circuli Quadrato.

Ioannis Demisiani Cephalleniensis D. Philosophi ac Theologi.

ΗΜΟΣ ἐοῖς ἐπέεσσι πολύχροα Δαίδαλα ΠΟΡΤΗΣ
   Φαίνει, τοῖς θαλέθει γαῖα πυκαζομένη.
Οὔατι θαμβαίνουσα βιαρκεῖ μῦθον ἀκούει,
   Καὶ σφετέρης γαίει φέγγεσιν ἀγλαΐης.
Ἀξυγέτου βάζοντος ἀπείρεστα θαύματα πόντου,
   Σιγαλέῃ πόντος νηνεμίῃ γελάα.
Ἠέρος αἰγλήεντος ὅταν χύσιν αὖτις ἐνίσπει,
   Ἶσον ἀπαστράπτει δώμασιν οὐρανίων.
Αἰθέρος ἀστροχίτωνος ἀτειρέα νῶτα πιφάσκει,
   Καὶ Πόλος ἠρεμέων οὐδ' ἑτέρωσε θέει.
Κύκλα δὲ, καὶ Τετράγωνα, Τρίγωνά τε, Πρίσματα, Κώνους,
   Καὶ γραμμὰς μετρεῖ, κέντρα τε πυραμίδων.
Ὅσσα τε πὰρ Νείλου προχοῇς μητίσατο τέχνῃ
   Ἀΐα δαιτρεύων Ἠερίης ναέτης.
Αὐτήνυν Σοφίη πολυμήχανα δήνεα τίει,
   Ὕδωρ πρηῢ ῥέον Νεῖλος ἐρυκακέει.
Ἔδρακε γὰρ Τετράγωνα πάρος πολεμήϊα Κύκλοις,
   Ὅρκια σπευδεσίης, καὶ φιλίης ταμέειν.
Ἔδρακε, καὶ θάμβησεν ὅπερ χρόνος ὀψὲ φαείνειν
   Ἤμελλε, ζαθέων ἠΰ τέκος πραπίδων.
Ἄλλον ἐγὼ Κρονίδην δώσω πολυΐδμονα ΠΟΡΤΗΝ,
   Ἣν ἡμῖν ἄλλην Παρθενόπην ὀπάσεις.

FRANCISCI STELLVTI
FABRIANENSIS.
LYNCÆI.

Vidimus innumeras mutantem Protea formas,
Credite, nam veri Nuncia Fama canit.
Tortilis en Orbis species se vertit in omnes,
Et QVADRVM teretes efficit arte rotas.
Dicite Pierides quo tandem munere factum?
Aut nostro, aut PORTÆ. visq. laborq. pares.

ILL.

ILL.^{MO} PRINCIPI AC D. D.

FEDERICO CAESIO MONTIS CAELII MARCHIONI II.

Io. Baptista Porta Neapolitanus. S.

CERTAMVS inter nos, Illustrissime Vir, tu beneficijs, ego officijs; quibus ęquo animo vel vincar abs te, vel, si fieri posset, vincam te. Et sanè grauis ista contentio nullum vnquam finem habitura videtur. Summis me ornas laudibus, meos libellos plausu, nedum honore prosequeris, &, quod caput est, iacentes aliquando, ac mox improborum impetu proterendos, erigis & defendis; quæ quidem merita ita in memoria insederunt mea, vt mei ipsius potiùs, quam illorũ erga me magnitudinis obliuio capiat. Ego verò si titulos percensere velim, quibus tuũ animum virtus cohonestauit, splendorem domus, quam

,, Bellipotens illustrat Auus, Tu fulcis, & ornas.

aliaq. ornamenta, quibus te natura mirificè cumulauit; & vires, & vita me deficeret. quid? ipsam Inuidiam ad maxima quæque, ac pulcherrima labefactanda natam, virtute superasti.

,, Est

„ Est aliquod meriti spatium, quod nulla furentis
„ Inuidiæ mensura capit.

Sed non est animus in præsentia laudes enumerare tuas. maioris id molis est. leuiter, at amanter tetigisse satis; neque enim qui Cœlestium Orbium ornatum in parua describunt tabella, de illorum pulchritudine quicquam demunt; parua, vt ita dicam, sed concinna magnitudo. Quid igitur mirum si certos fines, terminosq. huic suauissimæ concertationi non constituo? Non patitur mea in te obseruantia Victoriam. Tu, quæ tua est magnanimitas, cedere nescis. Esto lis sub te Iudice. Tu te vince

„ Inq. animis hominum pompa meliore triumpha.

meum certè quidem tibi deuinxisti, ac deuicisti. Non excitabo testes ex monumentis; quæ in manus peruenerunt Sapientum. Sit hic liber tuo insignitus nomine, amoris, ac venerationis in te meæ pignus sempiternum. Circulum quadrare conatus; rem scilicet aggressus in eruditorum identidem commemoratam comitijs, in Philosophorum agitatam scholis, in Mathematicorum iactatam iudicijs. Multos in hoc Theoremate me labores exantlasse, curas, & cogitationes euigilasse meas, ac pertinaci industria desudasse, non inficias iuerim. An verò modum quadrandi Circuli inuenerim, sicq. præmium, & fructuum meorum cœperim laborũ, non facile statuerim. Id saltem assecutus mihi videor. Latissimum aperuisse campum ad meliora vel inuestiganda, vel inuenienda. Verecundè tamen dixerim, plurima nos excogitasse, multa in disquisitionem vo-

casse,

casse, suisq. examinasse ponderibus, quæ nemo vsque in hodiernum diem odoratus quidem est. Immo, vt id quod sentio, aperiam, opus magnis viris tentatum, ac tandem desperatum, aut inchoauimus, aut perfecimus. nihil tamen in tanto, ac tali negocio pro certo affirmarim, te, non assentiente, tuæ enim Παλλάδος ὑπὸ πτερυγῖς ὄντα ἅζονται βροτοί. tuo iudicio, ac patrocinio fultus, non morabor τοὺς Γεφυριστάς. Tenes, opinor, memoria, incomparabilis vir, Ephesiorum factum. Illi dum hostili vexarentur bello, de rei euentu consuluerunt Oraculum. datum responsum, si Rempublicam sartam tectam cuperent, ad Tutelaris Numinis Templum Vrbē alligarent; quo peracto, hostes in fugam verterunt, Ephesumq. obsidione, ac metu liberarunt. Multi iam cogitant nostra obsidere inuenta, machinas admouent, ac penè labefactant: sed meus Apollo dudum me commonefecit, vt me meaq. tui Genij vinculis obstricta, aduersariorum impetus reprimam, ac frangam. Tuere igitur, Heros, litterarum, ac litteratorum Censor, quæ tibi dicata sunt, eo vultu, quo intuentium allicis animos. Habes à Philosophia non minora clementiæ, quam iudicij præsidia, vt illa nouos hosce foueas conatus, hoc vt defendas. Vale, tecumq. crescat tuæ Gentis spes, Patriæ columen, litterarum decus, meæ Neapoleos amores, Italiæ gloria. Kal. Iulij M. DC. X.

AD

AD LECTOREM PRAEFATIO.

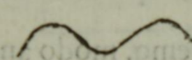
NON immeritò, Candide Lector, admirari satis non possumus de viris quibusdam omni doctrinæ genere cumulatis, qui, cum mathematicas tractationes sibi assumpserint, atque in ijs cum laude versati, sint, de illa parte, quæ curuas complectitur lineas, nihil ferè commentati, aut meditati sint. In quadrando quidem certè Circulo (re scilicet æquè decantata, atque ardua) plerique ingeniosi viri desudarunt, & elaborarunt rectè ne, an secus, ipsi viderint. Ego qui noui aliquid moliri, non aliorum labores veluti fucus surripere studeo, eandem quidem subiui aleam. Sed vt legitimè & expeditius id præstarem, multa ex Euclideis elementis ad propositum argumentum transtuli, ac plurimas confeci demonstrationes, ex quibus, aliquas, quæ ad rem facere videntur selegi, easq. vti curuilinearum figurarum elementa proposui. Hinc ad perdifficilè Theorema de quadrando Circulo, progressus sum. quid vero effecerim in re multis circunfusa tenebris, & in quà summorum virorum ingenia errare potius, quam hærere visa sunt, aliorum esto iudicium. si perfectionem non sum omnino assecutus, conatus certè, & adumbratio tanti Theorematis laudandus.

IO. BAPT. PORTAE NEAPOLITANI ELEMENTORVM CVRVILINEORVM Liber Primus.

DEFINITIONES.

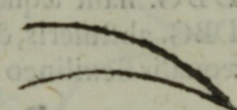
PRIMA.

LINEA curua est, quæ inter sua nō æquè fluit puncta, sed facto sinu flectitur.

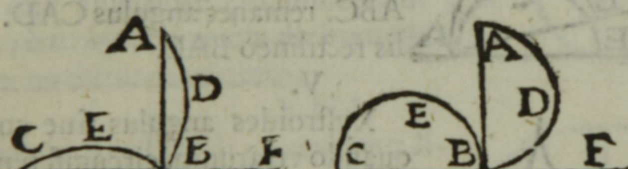


II.

Angulus flexilineus est flexarum linearum retusio suo nutu sibi coincidentium.



III.

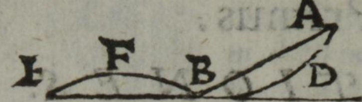


Angulus flexilineus rectus, qui rectilineo respondet.

Exempli causa sit A.B.insidens linea iacens FBC. vtrobiq. sibi æquales constituens angulos ABF, ABC. sitq. AB. ipsi B.C. æqualis & ipsi AB.hemicyclium circumscribatur ADB,vel circuli portio, & ipsi BC. alter B. EC. vel æqualis circuli portio. Cyclogoni ergo DBA. CBE. sunt æquales, & quanto angulus AD.B.F. maior est recto ipso contingentiæ angulo DBF. tanto ABE. superat ipsum ABC. altero contingentiæ angulo ABE.

totus igitur ADBEC. toti ABC. recto æqualis, vt probauit Proclus in Eucl.

IIII.



Obtuſus curuilineus, qui obtuſo rectilineo fit quando à recto reſupinata in maiorem angulum abit.

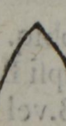
Eodemq. modo angulũ ADB. FE. flexilineum, rectilineo ABE, eſſe æquale flexilineus angulus FBE. eſt æqualis flexilineo DBG. nàm æquales ſunt circulorum portiones, ſi angulum DBG. abſtuleris, & repoſueris ſupra EB. erit rectilineus DBE. æqualis flexilineo DGBFE.

Sic etiã ſemicirculus ADB. æqualis eſt ACE, dematur portio communis ABC. remanet angulus CAD. æqualis rectilineo BAE.

V.

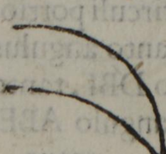
Xyſtroides angulus ſiue concauus quando vtrarumq. circumferentiarum caua extra fuerint, & intus ſe reſpiciens conuexitatibus ſuis.

VI.



Contra conuexus angulus quando circumferentiarum conuexa vtrinq. extra fuerint, & inter ſe ſuis finibus aſpexerint.

VII.



Angulus μηνοειδής. ſiue lunaris, qui ex caua conuexavè circumferentia fuerit, vt conuexum vnius alterius conuexitatem aſpiciat.

Cyſ-

VIII.

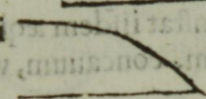
Cyſsoides Angulus ex hederæ folijs nomen indeptum ex gibboſis, cauiſq. lineis conſtat ad punctum vnum conuenientibus, vndatim contra ſe diſcurrentibus veluti Vndulatus.

IX.

Mixtus angulus, qui ex rectis circuloſiſq. lineis componitur.

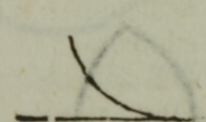
X.

Cyclogonus, qui à Caua, & recta circuli circumferentia conſtat.



XI.

Κερατοειδὴς. ſiue in cornua falcatus, quando rectæ opponitur conuexa noſtri contingentiæ vocant.



XII.

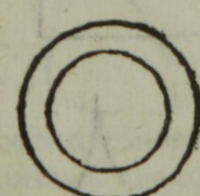
Figura vel anguloſa, vel agonia, agoniarum figurarum circulus princeps, lineæ partem, quæ ambitioſè circumuoluitur, & aream obambit concauum dicimus, quæ extorſum inuehitur conuexum.

XIII.

Sphærois ſiue Ellipſis ex ambienti linea in ſe recurſa deſcribitur vnius duæ diametri, longitudinis vna longior, latitudinis altera ad rectum in medio ſe ſecantes.

XIIII.

Vertex. ſiue corona eſt duorum circulorum concentricorum circumcurſus.

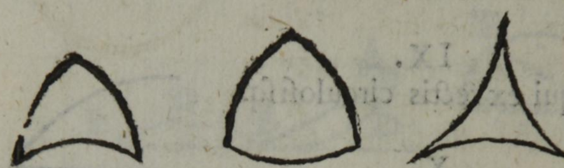


XV.

Anguloſarum figurarum metriſcus ſiue

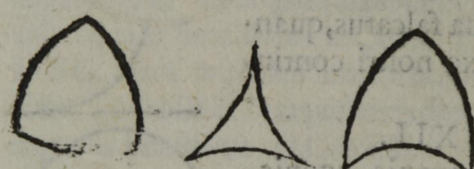
lunula prior, eſtq. in eaſdem partes caua habentibus comprehenſa circumferentijs figura.

XVI.



Trilaterarum figurarum flexilinearum triangulum primum est, quod tribus conſtat ijſdem æqualibus circumferentijs circuli, idq. conuexum, concauum, vel mixtum.

XVII.



Iſoſcele triangulum curuilineum, quod duabus tãtum æqualibus circuli circumferentijs continetur, idq. etiam conuexum, vel concauum, vel mixtum.

XVIII.

Scalenum flexilineum eſt, quod tribus inæqualibus circuli circumferentijs clauditur, ijsq. cauis conuexis, & mixtis.

XIX.

Semicuruilinea triangula ſunt, quæ ex rectis, curuiſq. circumferentijs continentur.

XX.

Tricuſpidatum triangulum, ſiue acio idea quadrilaterum eſt triangulum quod tres habet acutos angulos.

XXI.

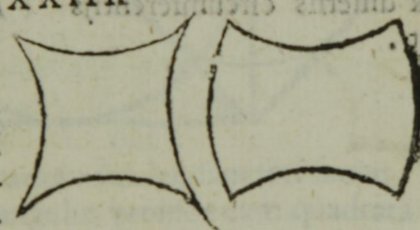
Inter triangulares figuras πελεκοειδής. Figura est, quæ securis vel bipennis formā habet.

Eius Theocritus meminit. Nicandri Scholiastes sutorium scalprum. Τὰ κυκλοπερῆ σιδήρεια, οἷς οἱ σκυτοτόμοι τέμνουσι καὶ ξύουσι τὰ δέρματα. Idest circularia ferramenta quibus pelles incidunt, & deradunt.

XXII.

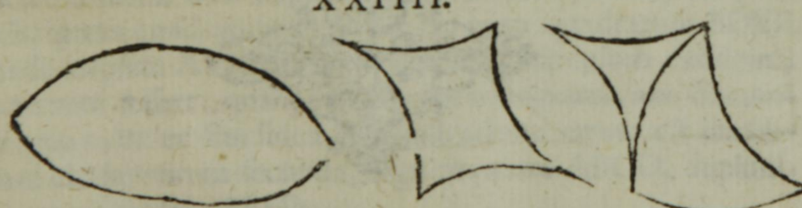
Arbilones ex tribus circumferentijs compræhensi; Horum meminit Pappus spatium illud inter circumferentias interiectum ἄρβηλον vocans.

XXIII.



Quadrilaterarum quidum figurarum curuilinearum quadratum quidem flexilineū est, quod rectis angulis, & æqualibus circumferentijs perscribetur.

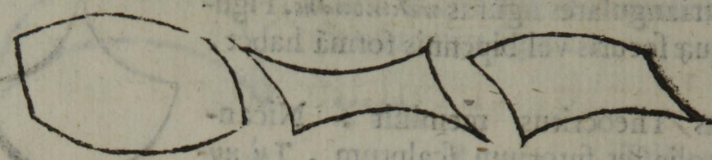
XXIIII.



Rhombus flexilinea æquilatera quidem, sed non rectangula, aduersos tamen angulos æquales habet, eorumq. aliquos concauos, conuexos, & mixtos.

Rhom-

XXV.



Rhomboides vero neutrum horum habet neque laterum, neque angulorum æqualitatem, ſed contrarias circumferentias, & angulos æquales habet ſimiliter etiam concauus, conuexus, & mixtus.

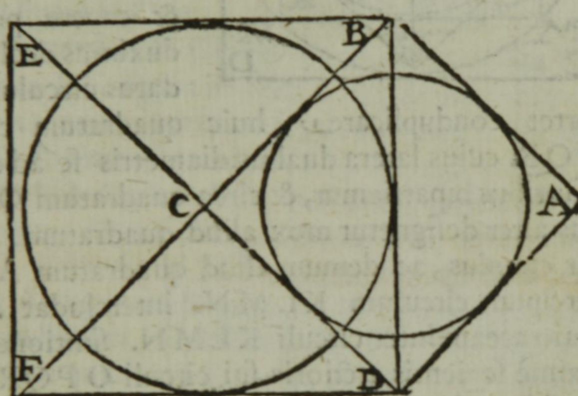
XXVI.

Trapezoides curuilineum, quod quatuor inæqualia latera ex diuerſis circumferentijs habet.

PROBL. I. PROP. I.

Datum circulum duplare.

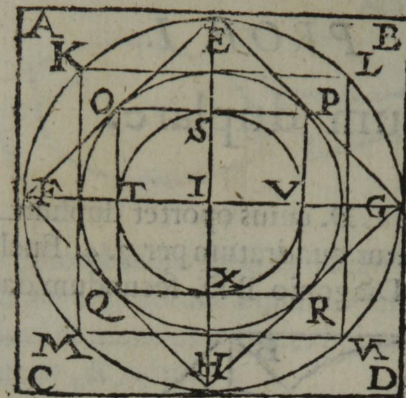
SIT datus circulus A B C D. cuius oportet duplum inueſtigare. Deſcribatur quadratum per 7. 4. Eucl. & ſit A B C D. ducto Diagonio B D. ſecundum datum B D. deſcribatur quadratum per 48. 1. Euclidis, & ſit B E D F. cui circulus inſcribatur per 6. 4. dico circulũ BDFE. eſſe dati duplum. Hanc



conſtructionem demonſtratione fulciendam rati ſumus. quoniam B C D. rectus eſt angulus proinde cum quadrata lateris B C. C D. æqualia ſint quadrato ex B D. ex 47. 1. ergo qu adratum ex B D. duplum quadrati A B C D. ſed ex B D. deſcriptum quadratum eſt D B F E, ergo quadratum BDEF. duplum ipſius A B C D. ſed circulus ad circulum eandem rationem habet, quam quadratum inſcriptum, aut circumſcriptum, vt ex Euclidea demonſtratione ratum eſt duodecimi elementorum ſecunda, ergo circulum ABCD. duplauimus per circulum BEFD.

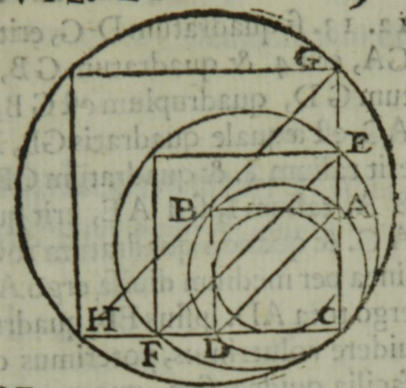
Plato ita quadratum duplat vt à Vitruuio annotatur. Dimidium quadrati B D C. eſt quarta pars quadrati BEF. ergo quadratum BEDF. duplum eſt ABCD.

Poſſu-



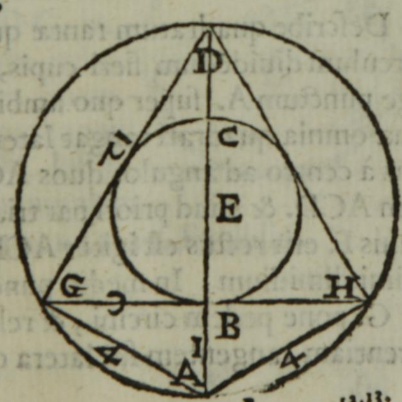
Poſſumus, & alio modo circulos duplare, ſi circa datum circulum quadratum induxeris, & poſt circa quadratum circulum, & circa circulum aliud quadratum eodem modo alios circulos ſemper duplicabis. Sed quo iuuenes rectius imaginari, & capere poſſint exemplo duximus declarandum. Eſto datus circulus STVX. quem oportet conduplicare, huic quadratum circumſtruemus OPQR. cuius latera duabus diametris ſe ad centrum I, decuſſantibus bipartiemur, & circa quadratum OPQR. circuculus alter deſignetur mox aliud quadratum. K. L. M. N. & alter circulus, ac demum aliud quadratum ABCD. quod poſtremum circulum KLMN. intercludat. His perſtructis aio aream inter circuli KLMN. finitionem concludam proximè ſepientis arctioris ſui circuli OPQR. duplam eſſe, vt laxior poſtremi area eius, qui minimum intercludit quadrupla ſit, & ſic in infinitum duplare poſſumus cuius veritas hac demonſtratione repræſentabitur. Quoniam linea AB. bifariam diuiſa eſt in E, quadratum ABCD. quadruplum eſt ipſius AE, & ſic in quatuor quadrata æqualia AI, EG, FH, ID. & hæc à quatuor diagonijs bifariam diuiſa ſunt EF, FH, HG, GE, quatuor igitur triangula extrinſeca FAE, EBG, GDH, HCF. quatuor interioribus æqualia ſunt; ergo totum quadratum ABCD. quadrati E. F. G. H. duplum erit, eademq. ratione quadratum EFHG. ipſius O. P. Q. R. duplum erit, & primum A. B. C. D. huius quadruplum.

Anni-



Annitemur etiam per quadrata dupla ambientia idem rimari, & abſoluere. Eſto datus circulus A B C D, cui quadratum ABCD. circumſtruimus: mox ab oppoſitis angulis ducto diagonio AD & à puncto C, ſuperne verſus A, ſigna lineam eiuſdem longitudinis ipſius AD, & ſit C E, & ex parte inferiori ſit C F, mox trahe diagonium E F; & iterum quanta E F, figura in linea C G, & inferne linea CH, & id toties repetendum quoad ſatis videbitur. Sic quadratum ex GH, duplum eſt quadrati E F, & quadratum E F, duplum AD, & AD, duplum AC. Sed quod exprimit figura, demonſtremus. Quoniam quadratum AD, eſt æquale quadratis A C, C D, & AC, CD, latera æqualia ſunt, ergo quadratum ex A, duplum eſt quadrati AC, ſed AD, eſt æquale EC, ergo quadratum EC, eſt duplum AC. Sed quia E F, eſt æquale duobus quadratis EC, CF, & EC, C F, æqualia ſunt, ergo quadratum ex EF, duplum eſt EC. Eodem modo GH, duplum ipſius AC, & ſi idem varijs modis aſſequi poſſet, tanquam ſuffecturos reliquos cenſuimus miſſos facere.

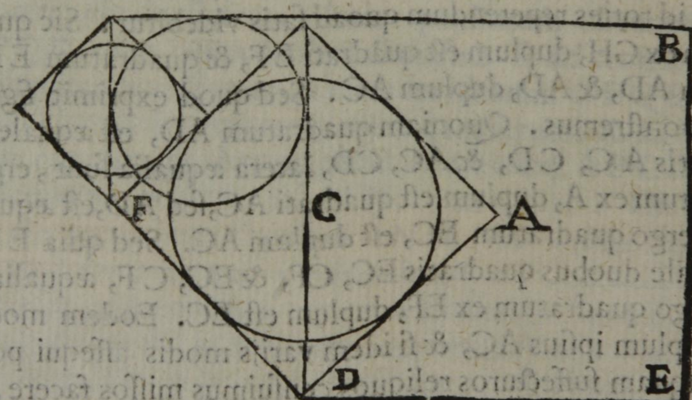
Libet non prætermittere, alium quadruplandi modũ.



Sic circulus B C, quem intendimus quadruplare circa quem æquilaterumtriangulum per tertiam quarti deſcribamus, & circa illud alium circulum per quintam eiuſdem quem quadruplum pronunciamus. Quoniam DG, tripla eſt ipſius GA. ex

12.13.

12. 13. si quadratum D G, erit duodecim partium talium GA, erit 4. & quadratum G B, erit talium 3. nam quadratum G D, quadruplum est G B, suæ dimidiæ, sed quadratum AG, est æquale quadratis GB, BA, igitur si quadratum G A, erit talium 4. & quadratum GB, talium 3. erit quadratum B A. talium I, sed AE, erit quatuor, quoniam est æqualis A G. & quando quadratum totum 4. est, & sui pars 1. erit linea per medium diuisa ergo AB. ipsius AE. dimidium erit, ergo tota AD. ipsius EB. quadrupla est. Si vero circulum diuidere voluerimus, poterimus conuersa vti operatione; Et si facilia quidem sint, quo tyrones iuuemus alium modum apponere non pigebit.



Describe quadratum tantæ quantitatis quantæ duplarem circulum diuidēdum fieri cupis, & sit ABCDE. cuius medio fige punctum A. super quo ambitiosa linea circumducatur, quæ omnia quadrati tangat latera, deinde annecte literas rectas à centro ad angulos duos AC. CD. & constitue triangulum ACD. & aliud priori par triangulum constitue cuius angulus F. erit rectus est igitur ACDF. secundum quadratum primi dimidium. In medio puncto huius diagonij CD, qui sit G. pone pedem circini, & reliquo vago describe circumferentiam tangentem sui latera quadrati ACDF. & hoc modo

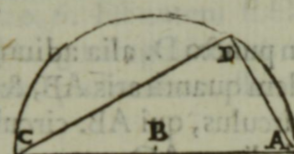
do

do in infinitum poteris circulos dimidiare. Demonstratio ex superiori pendet.

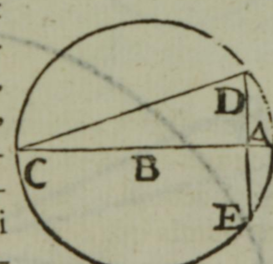
Datum circulum triplicem quintuplicem, & septuplicem reddere.

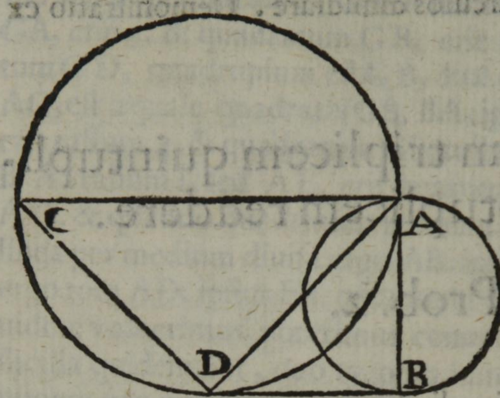
Prob. 2.

SIT dati circuli diameter AB. quem volumus triplare elongetur AB. in C. & sit AB. æqualis BC. & fiat circulus ex diametro A C. & sit AB. æqualis A D. quæ in circulo locetur per primam 4. Euclid. & ducatur DC. dico circulum ex DC. diametro circuli ex AB. tripli esse cuius demonstratio ex 12. 13. lib. Eucl. pend.

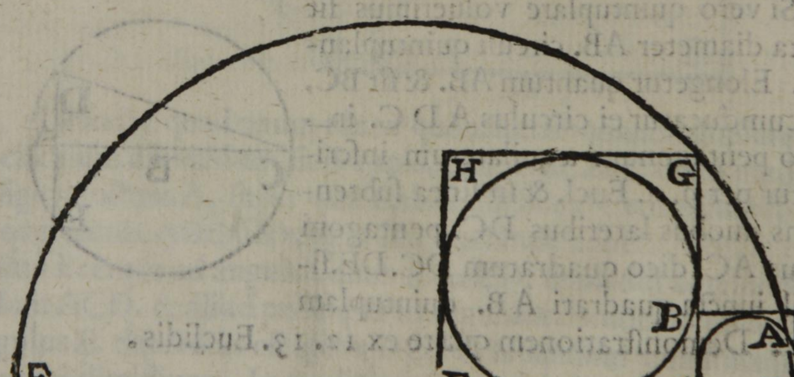


Si vero quintuplare voluerimus sit data diameter AB. circuli quintuplandi. Elongetur quantum AB. & sit BC. circumducatur ei circulus A D C. in quo pentagonum æquilaterum inscribatur per 9. 4. Eucl. & sit linea subtendens duobus lateribus DC. pentagoni latus AC. dico quadratum DC. DE. simul iuncta quadrati AB. quintuplam esse. Demonstrationem quære ex 12. 13. Euclidis.





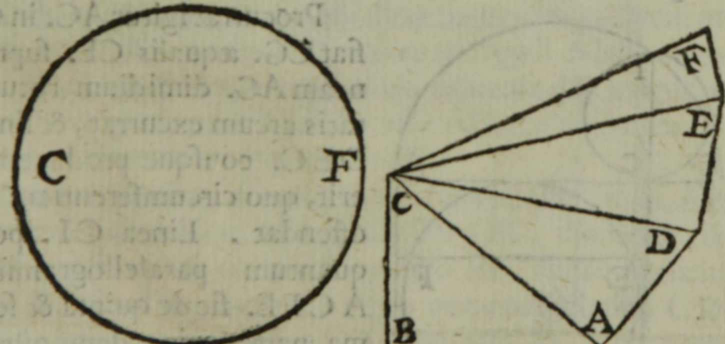
At is modus, vniuerſalior, & commodior viſus. Sit datus circulus A B. dimetiente deſcriptus, volo tergeminum reddere. Puncto igitur B. ipſius lineæ A B. ad rectos angulos adiungatur D B. paris quantitatis. Mox trahatur AD. dein ipſius lineæ DA. in puncto D. alia adiungatur DC. ad rectos angulos, & eiuſdem quantitatis AB, & ducatur CA, & dimetiente CA. fiat circulus, qui AB. circuli tergeminus erit. Quoniam potentia lineæ AC, potentia linearum AD. DC. ſibi vendicat, & AD. ipſas AB. BD. igitur AC. valet tres circulos, cuius ineſt A B. Quod ſi quintuplare, aut per alios impares numeros multiplicem reddere voluerimus: Addemus puncto C. lineam alteram ad pares angulos quantitatis AB. & erit quintupla ipſius AB.



Poſſumus etiam ſi velimus alio modo idem exquirere.

Sta-

Statuatur circulus A B C D. ſepties multiplicandus cui circumducatur quadratum, & latus eius producemus, illudque in octo partes diuidemus, cuius principium D. finis E. mox DE. per medium diuidatur in F. poſitoq. circini pede in F. & alio DF. circumducatur quouſq. ſemicirculum abſoluat DE. & latus C. B. quadrati producatur vltra B. in continuum, rectumq. ad arcum DE, & vbi eum contingit, illic ſcribe literam G. & ex CG. fiat quadratum CGHE. in quo circulus inſcribatur, qui continebit ſepties ipſum BACD. Quoniam CG. eſt media proportionalis inter EC. CD. igitur per 13. 6. Euclid. vt EC. prima ad tertiam CD. ita GH. quadratum ſecundæ ad BD. quadratum tertiæ per 20. 6. Eſt autem E C. per conſtructionem ſeptupla ipſius C D. igitur quadratum HC: ſeptuplum ipſius quadrati BD. quod probandum aſſumpſimus.

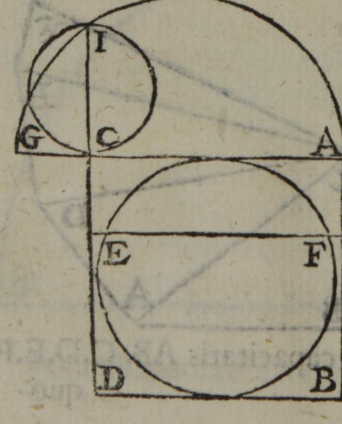


Sint poſiti quini circuli diuerſæ capacitatis AB. C.D.E.F. quo-

quorum quantitates volumus ſingulari circulo compræhendere, quod ita propemodum faciendum exiſtimamus. Eſto enim circuli diameter AB. conſtituatur ad rectos angulos ei BC. mox ducatur linea ab A. ad C. & hæc dimetiens poteſt binos circulos AB. C. Porrò puncto A. lineæ AC. recta linea erigatur ad rectos angulos, quæ ſit AD. & à puncto D. trahatur linea D.C. & hæc dimetiens eſt capiens tres circulos AB. C. D. ipſi demum CD. recta linea ad rectos erigatur DE. quarti circuli dimetiens potens quatuor circulos. Poſtremo ei lineæ EC. ad rectos iterum excitetur quinti circuli EF. traharurq. per FC. dimetiẽs, capiẽs iam cunctos circulos, & hoc modo omnes licet quotquot volueris compræhendere. Demonſtratio habetur ex penultima 1. libri Euclidis.

Ex dato circulo datam partem ſubtrahere. Probl. 3.

SI dati circuli volumus tertiam, vel quartam partem extrahere, hoc modo facito. Eſto circulus ABCD. circa eum deſcribe quadratum ABCD. cuius abſcinde partem tertiam, ac tranſuerſa linea conuenit à reliquis ſupernè diſtinguere FE.



Procurrat igitur AC. in G. & fiat CG. æqualis CE. ſupra lineam AG. dimidium rotunditatis arcum excurrat, & linea DEC. eouſque producenda erit, quo circumferentiam in I offendat. Linea CI. poteſt quantum paralellogrammum ACFE. ſic de quinta & ſeptima parte cuius demonſtratio ex vltima ſecũdi depẽdet Eucl.

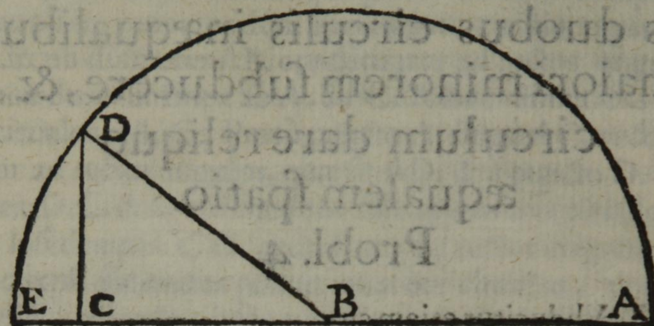
Datis

Datis duobus circulis inæqualibus à maiori minorem ſubducere, & circulum dare reliquo æqualem ſpatio.

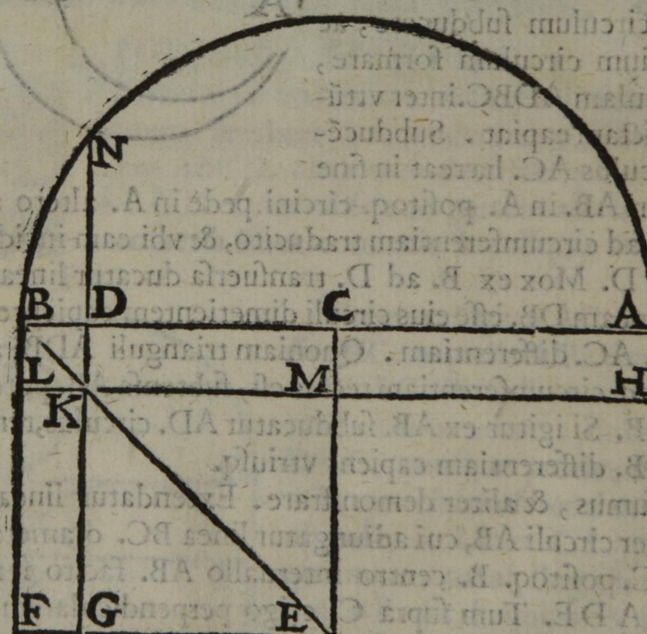
Probl. 4.

Subducitur etiam circulus minor à maiori, & circulus etiã formari poteſt, qui vtriuſque differentiam capiat. Eſto maior circulus ABD. volo ab eo circulum ſubducere, ac mox alium circulum formare, qui lunulam ADBC. inter vtrũque relictam capiat. Subducẽdus circulus AC. hæreat in fine diametri AB. in A. poſitoq. circini pede in A. altero ad C. vagum ad circumferentiam traducito, & vbi eam incidit, ibi locetur D. Mox ex B. ad D. tranſuerſa ducatur linea DB. Dico lineam DB. eſſe eius circuli dimetientem capientem inter AB. AC. differentiam. Quoniam trianguli ADB. angulus D. ad circumferentiam rectus eſt, ſubtenſa AB. poteſt, vt AD. DB. Si igitur ex AB. ſubducatur AD. circulus, remanet alter DB. differentiam capiens vtriuſq.

Poſſumus, & aliter demonſtrare. Extendatur linea AB. diameter circuli AB, cui adiungatur linea BC. diameter circuli AC. poſitoq. B. centro interuallo AB. facito ſemicirculum ADE. Tum ſupra C. erigo perpendicularem CD. quouſq. tangatur circumferentia in puncto D. & connecto BD. Dico CD. eſſe queſiti circuli diametrum. Quoniam C.



angulus rectus est quadratum subtensæ BD. æquale est quadratis BC. CD. & quadratum BD. est æquale AB. quia ex centro, ergo quadratum CD. tanto minus est quadrato BD. quantum quadratum BC.

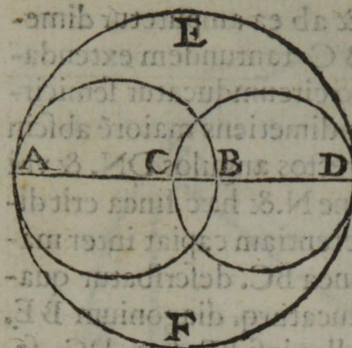


Quod si voles alio modo efficere hac ratione assequeris.

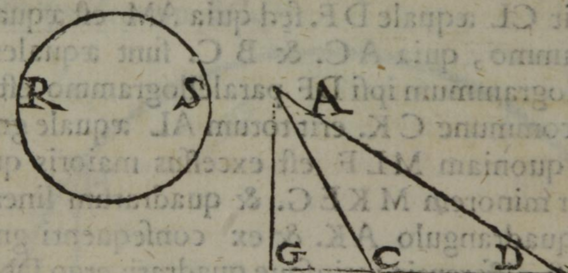
Sit dimetiens maioris circuli CB. & ab ea amputetur dimetiens minoris circuli CD, & linea B C tantundem extendatur ad A, & puncto C facto centro circumducatur ſemicirculus ANB.& à puncto D,vbi minor dimetiens maiorē abſcindit, erige ſuper tranſuerſam AB ad rectos angulos DN. & vbi DN periferiam ſecat ANB. iſtic pone N.& hæc linea erit dimetiens circuli inueniendi,qui differentiam capiat inter maiorem,& minorem circulum. Ex linea BC. deſcribatur quadratum per 46. p.E. & ſit CEBF. ducaturq. diagonium B E. & per D punctum deſcendat paralellas ipſi BF. ſitq. DG. ſecabitq. diagonium in K & per K ſignum excitetur alter paralellus ad AB, & ſit HMKL. & ex A ad H ducatur alter paralellus ipſi C M. Quoniam ſupplementum C K. ſupplemento KF. per 43. 1. eſt æquale, addatur commune quadratum D L. erit CL æquale D F. ſed quia AM eſt æquale MB paralellogrammo, quia A C. & B C. ſunt æquales, ergo AM paralellogrammum ipſi DF paralellogrammo eſt æquale, addatur commune C K. erit totum AL æquale gnomoni MLF. ſed quoniam MLF eſt exceſſus maioris quadrati CBEF. ſuper minorem M K E G. & quadratum lineæ D N eſt æquale quadrangulo A K. & ex conſequenti gnomoni MBF quæ eſt differentia vtriuſque quadrati; ergo DN circulus eſt differentia duorum inæqualium circulorum, quæ erat demonſtrandum.

Datis tribus circulis,duos à maiori,qui duobus circulis laxior ſit, ſubducere, & circulum dare reliquo ſpatio æqualem. Probl. 5.

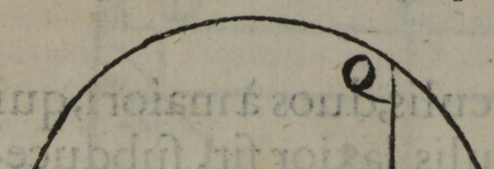
SIT amplius qualem quis conficere velit circulus ADEF. ſintq. pro arbitrio bini circuli A B. C D. quorum areæ



totam non contineant continentis amplitudinem, & ij vel in se ipsos flexi, vel mutuo intercisi, vt in exemplo, volo constringi circulũ, qui reliquum spatium contineat, scilicet interceptum vacuum. Ex tribus AD. DC. BA. fiat triangulum ACD. quod obtusum erit producaturq. alterutrius maioris circulatus, videlicet DC. eousque sit productionis meta, quousque à trianguli supercilio, quod prædictæ lineæ incumbit, linea



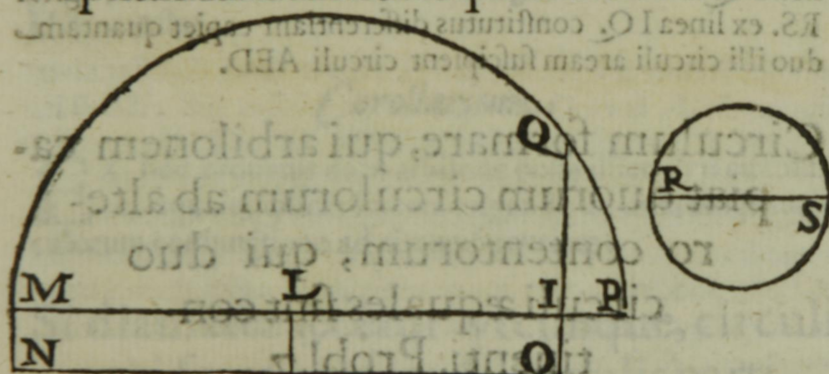
ad perpendiculum descendat, sitq. AG. His perfectis extruatur paralellogrãmum, cuius productus latus sit ex CD. geminata, & sit ML. LI. breuius ex CG. sitq. MN. IO. & producatur MI. donec æquetur IO. & sit IH. & extremæ lineæ ora terminentur per

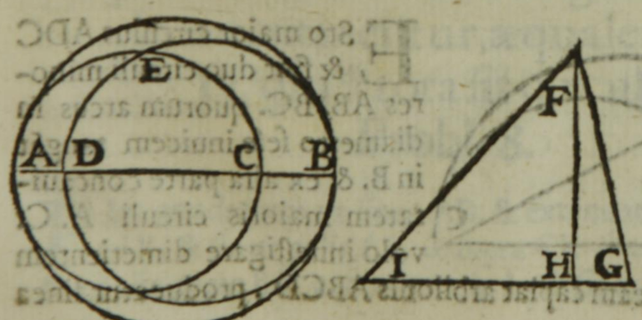


circuitionis arcum MQH. elongeturq. OI. inferaturque coeun-

coeunti lineæ cum arcu litera Q. ſic ex linea IQ. fiat circulus RS. capiens iam dictam differentiam. Quoniam angulus ACD. eſt obtuſus, quadratum lineæ AD maioris circuli ſuperat quadrata DC, CA, minorum circulorum per rectangulum comprӕhenſum ex DC. & CG. bis per 12. 2. Euclid. & ex his conſtitutum rectangulum MI, & diameter QI. capiet comprӕhenſam aream, ex qua circulus RS. quæſitam differentiam continebit.

Datis tribus circulis duos à maiori, qui duobus circulis anguſtior ſit, ſubducere, & circulum dare reliquo ſpatio deficienti æqualem. Probl. 6.





Eſto AEB. circulus, qui capiet duos circulos AC BD. quorũ vterq. cõcauitatẽ arcus capiẽtis cõtigat, ſuiſq.

arcis continentis areã excellant, vestigandus est circulus, qui differentiam excellentis areæ excipiat. Fiat triangulum ex tribus lineis AB. AC. DB. per 22. 1. Euclid. & sit GFI. qui erit acutus, cadat ex apice F. trianguli in substratam basem GI. orthogonaliter linea FH. & vbi eam abscindit, illic fige literam H. Porrò ex geminata base GI. & linea GH in se ductis, fiat paralellogrammum MO. & superior linea MI procurrat quousque sit æqualis IO. & sit P. Mox partire interuallum MP. per æqualia in D. & ex D centro describe semicirculum, elongeturq. linea IO. quousq. attingat arcum MP. in Q. & IQ dimetiens erit futuri circuli quæsitam differentiam capientis. Quoniam quadratum FI. minus est FG. GI. quadratis tantum, quantum rectangulum bis sumptum ex linea IG. GH. per 13. 2. Euclid. quod erit NI. & linea IQ. erit dimetiens continens aream NI. circulus igitur RS. ex linea IQ. constitutus differentiam capiet quantam duo illi circuli aream suscipient circuli AED.

Circulum formare, qui arbilonem capiat duorum circulorum ab altero contentorum, qui duo circuli æquales sint continenti. Probl. 7.

Esto maior circulus ADC & sint duo circuli minores AB, BC. quorum arcus in diametro sese inuicem tangãt in B. & ex alia parte concauitatem maioris circuli A. C. volo inuestigare dimetientem circuli, qui aream capiat arbilonis ABCD, producatur linea

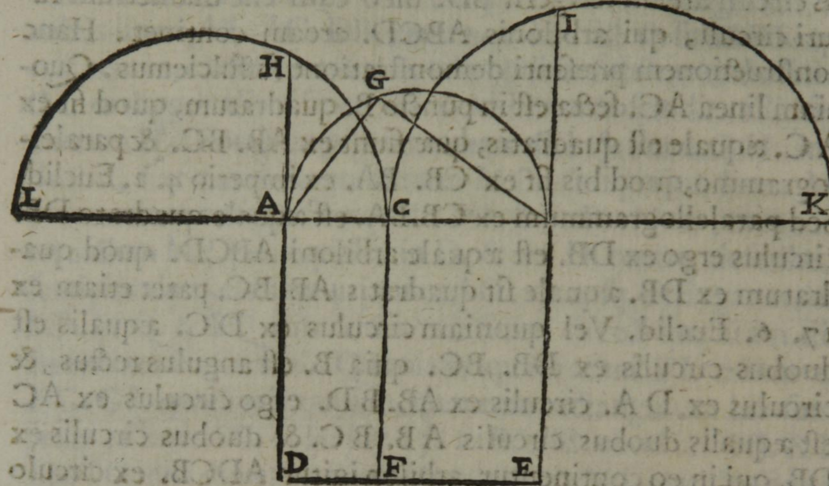
ex mutuo circulorum contactu B. donec rotundationis maioris circuli aream tetigerit BD. dico eam esse diametrum futuri circuli, qui arbilonis ABCD. aream continet. Hanc constructionem præsenti demonstratione suffulciemus. Quoniam linea AC. secta est in puncto B. quadratum, quod fit ex A C. æquale est quadratis, quæ fiunt ex AB. BC. & paralellogrammo, quod bis fit ex CB. BA. ex imperio 4. 2. Euclid. Sed paralellogrammum ex CB. BA. est æquale quadrato DB. circulus ergo ex DB. est æquale arbiloni ABCD. quod quadratum ex DB. æquale sit quadratis AB. BC. patet etiam ex 17. 6. Euclid. Vel quoniam circulus ex D C. æqualis est duobus circulis ex DB. BC. quia B. est angulus rectus, & circulus ex D A. circulis ex AB. B D. ergo circulus ex AC est æqualis duobus circulis A B. B C. & duobus circulis ex DB. qui in eo continentur, arbilon igitur ADCB. ex circulo D B. constat.

Corollarium.

EX hoc prouenit dato arbilone posse illico dari circulum ei æquale, scilicet lineam erigendo ad duorum semicirculorum coniunctione ad circumferentiam.

Si diameter secetur vtcunque, circuli, qui fiunt ex tota, & singulis partibus continentur, æquales sunt ei, qui à tota fit circulo. Probl. 8.

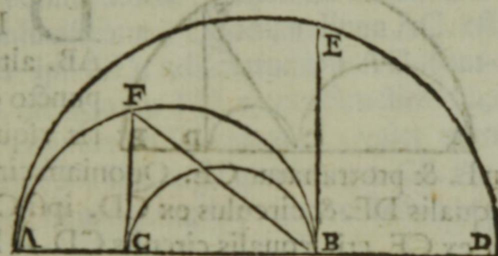
FIat quadratum ex linea AB. & extendatur AB vsque ad K. & sit æqualis AB. & supra CK fiat circulus C I K. & ex alia parte BA extendatur in L, & sit æqualis AB. & super



per CL. formetur circulus, & sit CHL. & supra AB fiat alter circulus AGB. & ex C extendatur paralellus ipsi AD. BE. & sit FCG. extendaturq. DA ad H. & EB ad I. ducanturq. ex G. GA. GB. Quoniam quadrangulum ex KB. BC. est æquale quadrato BI. & quadrangulum ex LA. AC. est æquale quadrato AH. coheant ipsæ BI. AH. in circumferentia AGB. in puncto G. quia in circumferentia ad rectum angulum: ergo quadratum ex AB. duobus quadratis AG. GB. æquale erit, & sic de circulis, vel aliter.

Quoniam per præcedentem diameter diuisa bifariam in C. quadratum ex AC. & CB. & rectangulum bis contentum ex BA. AC. est æquale quadrato AB. sed rectangulum bis contentum ex BA. AC. est æquale quadrato ex CG. sed quadratum ex BC. CG. & quadratum ex AC. CG. sunt æqualia quadratis ex AG. GB. & quadratam ex AG. GB. sunt æqualia quadrato ex AB. ergo ostendimus, quod intendebamus, & est secunda secundi Euclid.

Si diameter ſecetur vtrunq; circulus ex tota,& eius parte contentus æqualis erit circulo, qui ex partibus continetur, & eius quod ex prædicta parte fit circulus. Propoſ.9.

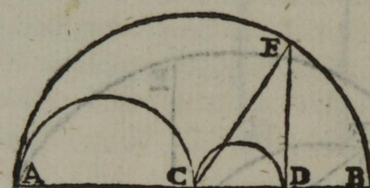


SIt diameter AB. ſecta vtcunq; in puncto C. dico circulum ex AB. BC. contentum æqualem eſſe circulo ex BC. CA. contento, & circulo CB.

Extendatur AB. in D. & ſit BD. æqualis ipſi BC. & ſuper ACBD. fiat circulus, & ſit AED. & ex puncto B. eleuetur perpendicularis vſque ad E. Idem fiat ex altera parte. Supra AC. & CB. duo circuli, & aſcendat ex C perpendicularis CF vſque ad ſemicirculum AFG, extendaturq. FB.

Quoniam quadrangulum, quod fit ex AB. BD. æquale eſt quadrato, quod fit ex BE. & quadrangulum, quod fit ex BA. AC. æquale quadrato ex CF. ſed quadratum ex FG. æquale eſt quadratis FC, CB. quia C angulus eſt rectus ergo circulus ex AB. BC. quod eſt BF æquale eſt circulis ex CB. & qui fit ex BC. CA. & eſt 3. 2. Euclid.

Si diameter secta fuerit in partes æquales, & inæquales circulus ex inæqualibus partibus contentus vna cum eo, qui fit ex linea, quæ inter sectiones interijcitur æqualis est circulo, qui fit à dimidia. Prop. 10.

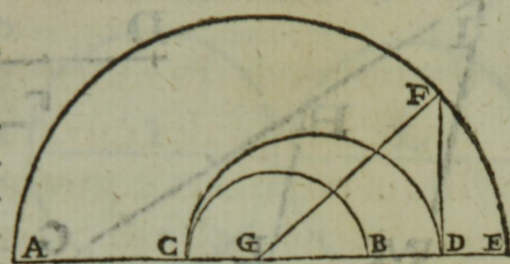


Describatur circulus ex Diametro CA. alter ex AB. alter vero ex CD. ex D. puncto erigatur perpendicularis vsque ad circumferentiam in E. & protrahatur CE. Quoniam circulus ex AD. DB. est æqualis DE. & circulus ex CD. ipsi CD. ergo circulus, qui fit ex CE. erit æqualis circulis CD. DE. sed CE. est æqualis CA. quia ex centro ad circumferentiam, ergo circulus ex duabus inæqualibus partibus compositus AD. DB. qui est DE. & circulus CD. vtrique æqualis est circulus ex dimidia CA. compositus, & est 5. 2. Euclid.

Si diameter bifariam secetur, eiq. in rectum adijciatur quædam recta linea, circulus ex tota diametro cum adiecta tanquam ex vno diametro, vna cum circulo dimidiæ æquales sunt circulo ex dimidia, & adiecta tanquam ex vna diametro descripto. Prop. 11.

Sit diameter AB. secetur bifariam in C. & ei in longum adijciatur linea BD. dico circulus descriptus ex AD.

DB. vna

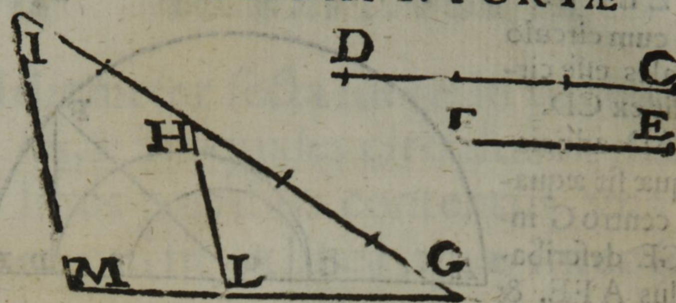


DB. vna cum circulo CB. æquales eſſe circulo, qui fit ex CD.

Lineæ AD. adijciatur DE, quæ ſit æqualis DB, & centro G interuallo GE deſcribatur circulus AFE. & ex puncto D linea ad rectum erigatur vſque donec circuli circumferentiam contingat, & ſit DF. & erit quadratum quadranguli AD. DE. & puncto D, linea DC ſecetur CB æqualis, & erit GD. & connectantur puncta GF. linea GD eſt æqualis CB. ex conſtructione. Quoniam linea AC. eſt æqualis lineæ CB, & CB ipſi GD. adijciatur ipſi AC. communis CG. & linea DE. eſt æqualis BD. ex conſtructione, ergo CD. ipſi GE. & angulus ad D. rectus eſt, valet ergo quadratum GF. quadrata GD. DF. ergo quadratum GF. valet quadratum CD. quod demonſtrandum propoſueramus, & eſt 6. 2. Euclid.

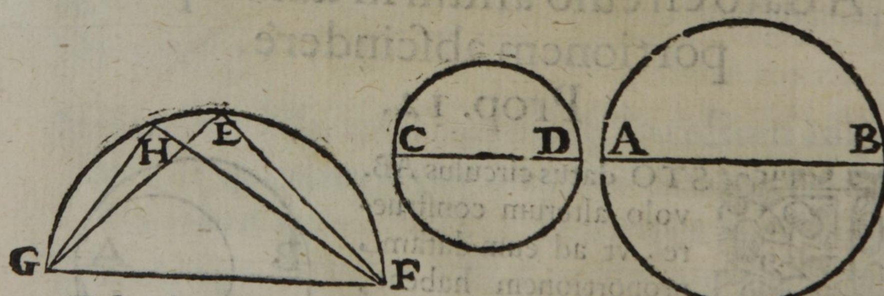
A dato circulo alium in datam proportionem abſcindere.
Prop. 12.

ESTO datus circulus AB. volo alterum conſtruere, vt ad eum datam proportionem habeat, ſitq. data proportio CD. ad EF. ſcilicet ſeſquialtera. Iungantur angulo binæ lineæ, quarum vna GH. ſit æqualis lineæ CD. protendanturq. quouſque HI ſit æqualis EF. Mox alteri lineæ æquetur diameter



meter AB. quæ sit GL. iungaturq. HL. & GL. extendatur, & à puncto I. lineæ H L. paralellus excitetur I M. dico LM. diametrum esse quesiti circuli A O. subsequialteri, & erit quarta linea proportionalis inuenta. Quoniam proportio GH. ad HI. est sicut GL. ad LM. ex 12. 6. Eucl. & GH. ad HI. est sesquialtera, ergo GL. diameter ad AO. diametrum sesquialtera est.

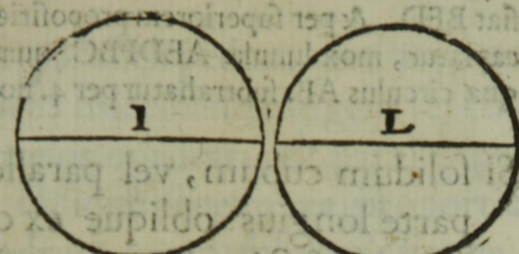
Ex duobus inæqualibus circulis duos æquales facere. Prop. 13.



SInt duo circuli inæquales AB. CD. volo hos duos circulos inæquales ad duos æquales reducere AB. DC. coniungo ad rectum angulum diametros, & sint GHF. & connecto GF. tunc super FG. facio semicirculum, qui per H rectum angulum trãsibit, mox diuido circumferentiã in E. bifariam, &

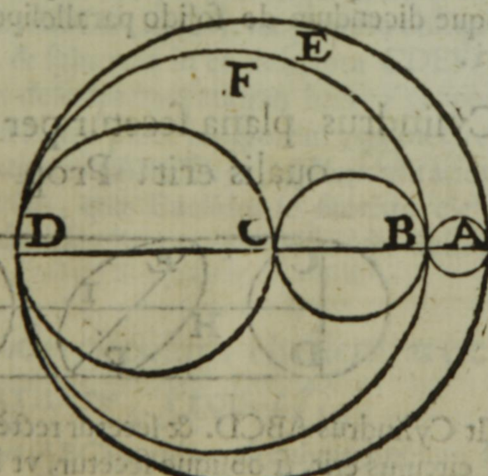
pro-

producto GE.EF.dico duos circulos duarum dimetientium GE, EF. esse æquales duobus dimetientibus GH, HF. & proinde circulis I, L. Quoniam angulus H est rectus, quia ad circumferentiam, ergo quadrata GH. HF. sunt æqualia quadrato GF. & quadratis GE, EF. etiam æqualia quadrato GF. & quæ æqualia vni tertio æqualia inter se, ergo circuli I, L. sunt æquales AB. CD.



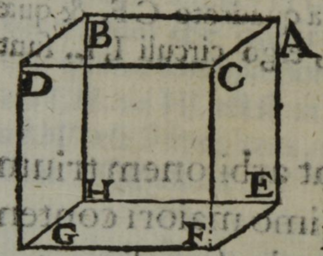
Circulum formare, qui capiat arbilonem trium minorum circulorum, ab imo maiori contentorum, qui tres circuli æquales sint diametro continentis. Prop. *14*.

ESTO circulus AED. cuius dimetiens AD. tribus circuli diametris intercidatur DC CB, BA. postulamus circulum formare, qui arbilonem, vel interceptam aream à maioris circuli cõcauitate, & minorum conuexitate contineat. Ex BD Diametro circulus



fiat BFD. & per ſuperiorem propoſitionem 7. arbilon BFDC capiatur, mox lunulæ AEDFBC quantitas cognoſcatur, à qua circulus AB. ſubtrahatur per 4. noſtram, & ſic de cæteris.

Si ſolidum cubum, vel parallelipedum altera parte longius oblique ex oppoſitis lateribus ſecetur ſectio altera parte longius erit. Propoſ. 15.



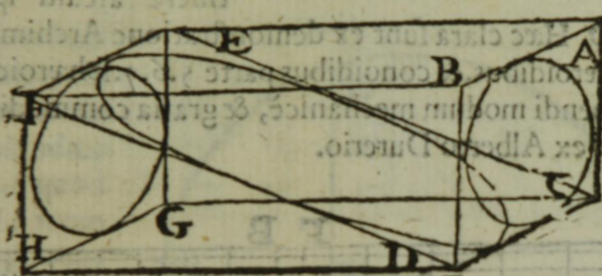
ESto ſolidus cubus ABCDEFGH & ſecetur à plano BDEF. oblique ex oppoſitis cubi lateribus BD. EF. dico BDEF. eſſe altera parte longius. Quia DG, GF, æqualis eſt. DF autem ſubiacens linea eſt æqualis duobus quadratis DG. GF. ergo longior BD. quæ ipſi DG æqualis eſt, idem dicendum de altera parte BH. HE. quia BE, maior eſt BH. HE. Igitur BDEF. altera parte longior eſt. Idem quoque dicendum de ſolido parallelipedo altera parte longiori.

Si Cylindrus plana ſecetur per obliquum ſectio oualis erit. Prop. 16.

SIt Cylindrus ABCD. & ſecetur rectè ABG. ſectio AGB. circulus erit, ſi oblique ſecetur, vt in IEHF. ſectio ſphærois erit ex ea quæ Serenus probauit in ſuis Cylindricis.

Si

Si intra ſolidum paralleli pedum altera parte longius cylindrus inſcribatut tangens ſui circuli baſis latera eius quadrati, & parallelipedum ſolidum obliquè ſecetur ea proportio erit circuli quadrato, quam ſphærois figura ad ſuum altera parte longius. Prop. *17*.

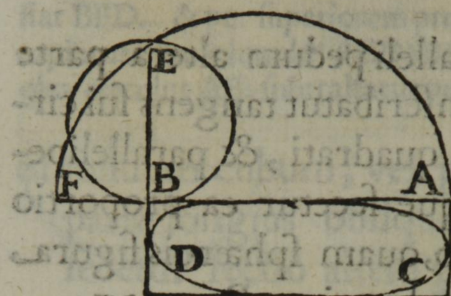


SIt parallelipedũ ſolidũ altera parte longius ABCDEFGH & ſint cylindri in eo deſcripti baſes ABCD. EFGH. circuli in ea deſcripti ABCD. EFGH. & planum obliquè ſecans illud ſit CDEF. & ſphærois in eo deſcripta CDEF. dico ſphæroidem intra ſe deſcriptam eandem habere proportionem ad ſuam figuram altera parte longiorem, quàm circulus ABCD. ad ſuum quadratum ABCD. cuius demonſtrationem omittimus: nam ex his, quæ Euclides in ſuorum elementorum, 12. & Archimedes in 31. præpoſitione deſcripſerunt, demonſtratur.

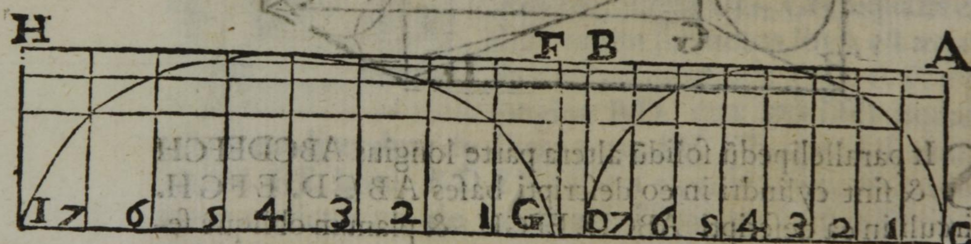
Data ſphæroide circulum eiuſdem areæ deſcribere. Prop. *18*.

ESto data ſphærois ABCD. iubeo circulum eiuſdem ſpatij. Circa datam ſphæroidem quadrangulũ circumſcri-

batur



batur ABCD. & latus AD prolongetur vſque ad F. vt BF. ſit æqualis BD. Et circa AF. ſemicirculus deſcribatur, elongeturq. BD. donec circumferentiam feriat, & ſit in puncto E. dico circulum conſcriptum circa BE. diametrum continere aream ſphæroidis ABCD. Hæc clara ſunt ex demonſtratione Archimedis libro de ſphæroidibus, & conoidibus parte 5.6.7. ſphæroidem idem deſcribendi modum mechanicè, & gratia commoditatis proponam ex Alberto Durerio.



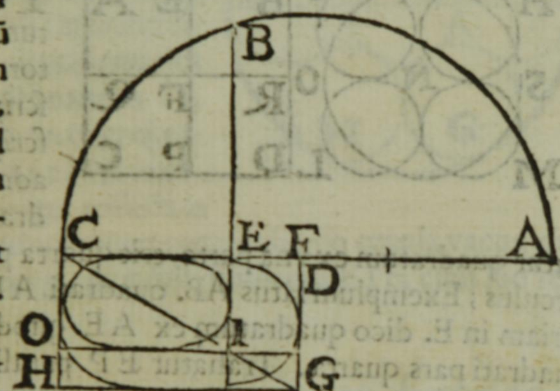
Deſcribe quadrangulum in duplo triplo, aut ſeſquialtero, & ſit in circulo ſupra AB. infernè CD. cuius latus CD. diuide in puncto E. per medium, ac poſito vno circini pede in puncto E. interuallo EC. ducatur per ſuperiorem partem vſque ad D. continget hic arcus lineam AB. deinde partire lineam CD. in octo æquales partes, & ex ſingulis diuiſionibus protrahe ſurſum parallelas in nuper deſcriptum arcum. Deinde fac iuxta quadrangulum ABCD. adhuc alium quadrangulum æqualis altitudinis, ſed longitudinis quantæ volueris cuius ſuperior linea FH. inferna vero GI. & ſeca id quoque in octo partes æquales, vt prius, poſtea producito ex ſingulis ſectionibus ſurſum lineas parallelas, deinde ex ſingulis inter

ſectio-

sectionibus prioris arcus, quæ per octo lineas parallelas factæ sunt, parallelas transuersales per omnes perpendiculares longioris quadranguli, & per sectiones illas longiorem parallelorum arcum produc lineam arcualem de puncto in punctum incipiendo ab angulo G. & finiendo in I, vt vides.

Datam sphæroidem duplare, vel quadruplare. Probl. *19*.

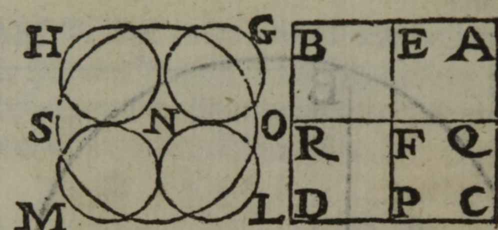
SIt duplandum quadrangulũ ECIO. quod idem est, ac duplanda sphærois, quod intra illud circum scripta est, & quadrangulum erit simile, similiterq. positũ, quemad modum, & sphærois. Producatur



latus quadranguli EC. vsque ad A. & sit AE. dupla ipsius AC. ac ipsius AC. medio D. posito circini pede, DA interuallo, describatur circulus ABC. producaturq. IE. vsque ad circumferentiam B. & erit EB latus vnum rectanguli describendi. Rescindatur igitur ex CA, linea CF, æquali EB, & ducatur diameter CI. deinde per F. ducatur parallela ipsi EI. quousque occurrat diametro CI in G. & per G altera parallela ipsi FC producatur, quæ sit GH compleaturq. parallelogrammum FH. erit igitur hoc parallelogrammum ipsi CI. simile, similiterq. positum duplum. Quoniam AE. EB. EC. sunt tres lineæ proportionales ex 13. 6. Euclid. erit vt AE. prima ad EC. tertiam, ita parallelogrammum FH. ex EF. secunda

cunda (nam CF sumpta est æqualis EB.) ad parallelogrammum EO. supra tertiam EC. quod simile, similiterq. descriptum.

Si circuli diameter bifariam secetur, & ex vna parte circulus fiat hic erit totius pars quarta. Prop. 20.

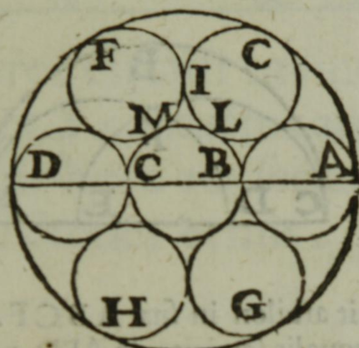


RAtiones circulorum sequuntur rationes quadratorum eis circumscriptorum, vel inscriptorum, & quemadmodum, si quadrati diameter diuidatur quadratum ex vna parte, erit quarta parte totius, ita, & circulus; Exemplum latus AB. quadrati AD. diuidatur bifariam in E. dico quadratum ex AE. quod est AF. est AD quadrati pars quarta. Trahatur EP parallela, ipsi AC. & QR. ipsi AB, & erunt quatuor parallelogramma rectangula, & si aliter probari posset rationem recitabo apud Platonem in Memnone. Socrates enim puerum hoc modo docet. Sit bipedalis linea AB. dico suum quadratum esse quatuor pedum AQ erit vnius pedis, erunt dico quadrata QF. FR. sit & altera pars CD duos pedes longa vnum alta C. erunt enim duo quadrata CF. FD. tota igitur quatuor erit pedum. Sit ergo circulus OILM. cuius diameter ONS. diuidatur bifariam in N. ex quantitate ON. quatuor circuli inscribantur, dico quatuor hos circulos toti æquales esse. Ratio ex superiori pendet: nam & circuli se habent ad quadrata, vt eorum diametri.

Cir-

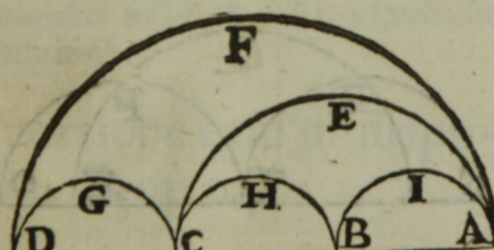
Circulorum vacua metiri, quando maior minores contineat. Prop. 21.

SIT magnus circulus AEFDHG, cuius diameter AD, diuidatur in tres partes, & in eo fiãt tres circuli AB, BC, CD, & ſupra duo alij, & duo infra inſcribantur; nam ſex circuli æquales intra vnum inſcribuntur ex 15. 4. Euclid. & ex præcedenti totus circulus nouem circulos cõtinebit: nam diameter trifariam diuiſa eſt, ſunt intus ſeptem contenti, ergo omnia vacua duo erunt circuli cuius 3. pars erit ſcalprum EIF. cum ſuo reſiduo ILM.

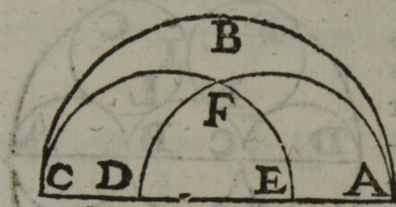


Arbilones per circulares figuras metiri. Prop. 22.

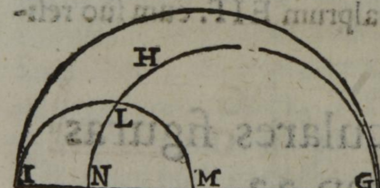
SIt arbilon primũ AFDGCHBIA. inueſtigãdum quot circulos capiet, qualis AB. Ex præcedẽti ſemicirculus AFD nouem capiet ſemicirculos qualis AIB ſi ſubſtuleris AIB, BHC, CGD, erit arbilon reliquum ſex



ſemicirculorum. Si quærimus arbilonem AFCHBI. erit ſemicirculus AEC quatuor ſemicirculorum qualis AIB, demptis duobus AIB, BHC, erit arbilon duorum ſemicirculorum. Si quærimus arbilonem AFDGCEA, erit ex iam dictis quatuor ſemicirculorum.



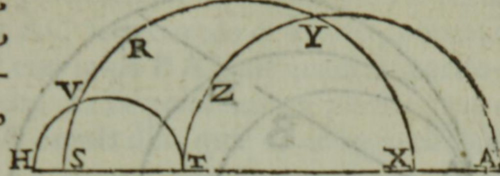
At ſi ſemicirculus maior ABC capiens duos ſemicirculos AED, EFC, vt docuimus in prima noſtri, dico arbilonem ABCFA eſſe æqualem duplato EFD, quod ex figura patet: nam quod replicatur in figura EFD deficit arbilon in ſua ABCF. Vel quarta pars dupli BEA. eſt æqualis ſemicirculo AFD. pars extera EFD eſt æqualis interiori corniculari angulo FBA.



Idem eueniet in figura GHI: nam duo ſemicirculi GHLN, & MLI. per ſecundam noſtri capiũt aream continentis circuli GHI. Vnde duplatum MLN. eſt æquale arbiloni GHLIHG.

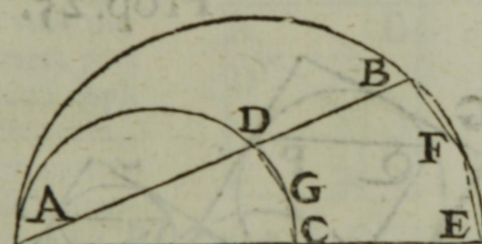
Poteſt etiam euenire, vt arbilon medium PQRT eſt æquale duobus extrinſecis circuli partibus OPZRS. ex ſuperiori ratione.

Idem eueniet in hac poſtrema, vt arbilon YZTVRY. ſit æquale duobus circuli extrinſecis partibus A Y X, S V H.



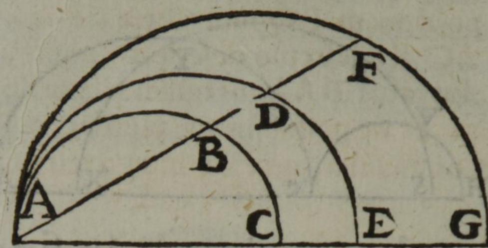
Si duo vel quamplures circuli in fine diametri ſe tangunt à contactus autem puncto ducatur linea eos ſecans arcus ſecti inter ſe ſimiles erunt. Prop. 23.

Sint duo circuli ABE, ADC ſe mutuo tangentes in fine diametri A, & ducatur recta linea ADB, ſecans arcus ADC, in D, & ABE, in B, qui quidem arcus bifariam ſecentur, quia anguli in circulo oppoſiti per 22. 3. duo æquales rectis duobus in 2. ergo angulus BGC, & BFE æquales ſunt cum eodem BAC angulo iuncto.



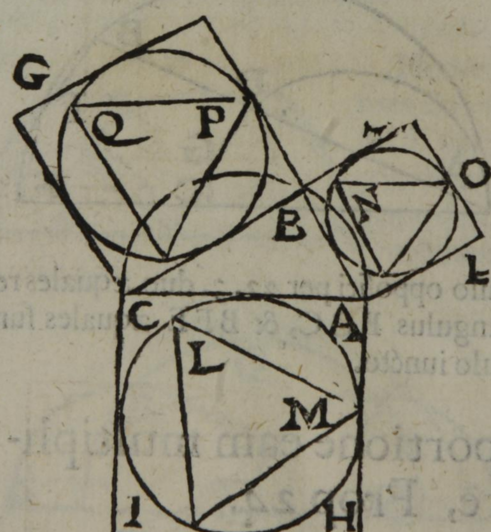
Data circuli portione eam multiplicare, Prop. 24.

Sit data circuli portio AB, quam volo duplare & ſit eius circulus ABC, & ſit ſemicirculus ADE du-



plus dati. Per primam nostri, lineã A B trahatur longius in D, & si voluerimus quadruplare sit circulus A F G quadruplus & linea A D in F extẽdatur, dico portionem DA ipsius BA duplam, & FA ipsius BA quadruplam cuius ratio pendet ex anteriori.

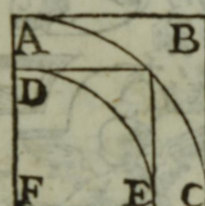
Ex duabus portionibus similibus vnã similem facere, vel subtrahere. Prop. 25.



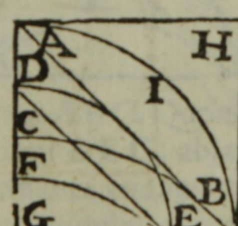
Sint duę inæquales circuli portiones PQ. ON. sed similes, & sit vnaquęque tertia circuli pars per 25. 3. Eucl. & sint P Q G, ODN; circa quos drscribantur quadrata B G, E B, vel eorum diametri, & iungantur ad rectum angulum ABC,& secundum AC describatur quadratum, & in eo circulus MLI, & sit ML latus æquilateri trianguli. Portio ML erit æqualis iam dictis dua-

duabus portionibus per ea quæ in 3. Euclid. probantur. Vel si ex ML voluerimus portionem PQ subtrahere, è recto quadrato AC, ac supra AC semicirculo descripto, ponatur latus quadrati B C, & eius latus B A latus quadrati portionem similem continentis. Et sic possumus ex pluribus portionibus vnam facere, & omnia illa, quæ de integro circulo retulimus.

Datum semicuruilineum triangulum duplare, subducere, vel è duobus similibus vnum facere. Prop. 26.



SIt semicuruilineum triangulum DGE, quod volo duplare, & sit circuli quarta pars FDE, fiat etiam circuli dupli pars, & sit A G C, circa eam quartam etiam quadrati partem circumscribo ABCF, dico triangulum semicuruilineum A B C G. duplum esse D G E, Quia quadratum A B C F duplum est D G F E inscripta portio proportionalis erit. Et sic subtrahere, & ex multis vnam facere poterimus ex supradictis.



Eodem modo triangulum D E G duplare poterimus, quod est æquale iam dicto: nam quadrati dimidium B H A est æquale B A G, si dematur portio B I A, æqualis BCG. remanet triangulum B A G. æquale BHA, iam dicto.

dicto. Vnde si voluerimus prædictum EDF semicuruilineum triangulum duplare, duplato quadrante HABG, protractoq. diametro BA. circulus duplus BIA, qui erit BC describatur BC, & erit triangulum ABC duplum trianguli EDF.

IO. BAPT. PORTAE NEAPOLITANI ELEMENTORVM CVRVILINEORVM Liber Secundus.

AXIOMATA.

I.

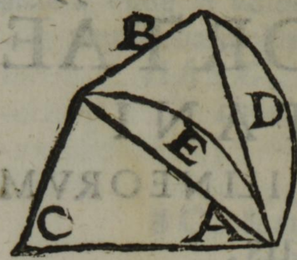
SI eidem addideris, quod prius dempſeris, quantitas æqualis erit.

II.

Si nota quantitas à nota ſubtrahatur, quæ remanet nota erit.

Triangulum ſemicuruilineum ex æqualibus, iiſdemq. circumferentijs compoſitum quadrare. Prop. 1.

ESto triangulum quodpiam ſemicuruilineum A D B C E, Aequalibus nimirum iiſdemq. circumferentijs ADB, AEC, & recta BC baſi conſtituta volo illud quadrare. Ducatur linea AB, & AC, aio aream trianguli ſemicuruilinei ADBCE eſſe æqualem triangulo rectilineo A B C. Quoniam circumferentia A D B eſt æqualis portioni A E C, ablata A D B, repoſitaq. in A E C æquale remanet triangulum rectilineum A B C ſemicuruilineo per primum axioma noſtrum.



Vel fiat triangulum æquale rectilineum ABC, & ſit AFC ex 22.1. Euclid. erit ſemicuruilineum triangulum ADBCE, æquale triangulo ſemicuruilineo AECF dempta communi portione AEC remanet rectilineum AFC triangulo ſemicuruilineo æquale ADBCE.

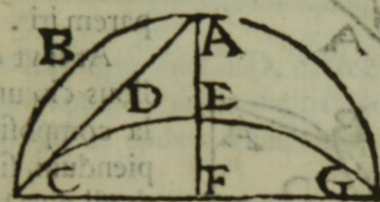
Alter Caſus.

AT ſi triangulum ADBCE anguſtius erit, & portionis lineæ neutiquam intactas circumferentias relinquent, ſed per medium tranſibunt, eadem operatione idem aſſequi poterimus. Sed quo res dilucidior euadat, rem exemplo complectemur. Eſto triangulum ADBCE, & circumferentia ADB æqualis ſit AFC, trahanturq. rectæ lineæ AB, AC, & ſecet AB baſis ADB circumferentiam AEC, aio rectilineum ABC æqualem ſemicuruilineo ADBCE. Quoniam portio ADB, æqualis eſt AEC dempta communi AEF, remanet ADBFE æqualis AFC, apponatur vtrique areola FBC, erit ABC rectilineum triangulum ſemicuruilineo triangulo propoſito ADBCE æquale.

Vel ad eadem præſtanda poſſumus eaſdem circumferentias in plures partes diuidere, nempe binas, ternas, quaternas, vt ABC circumferentiam in AB, BC, & ADE in AD, DE. Vnde excluſæ partes AB, BC, incluſis AD, DE erit area rectilinea ABCEDA æqualis ſemicuruilineo ABCEDA.

Trian-

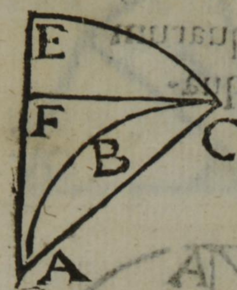
Triangulum ſemicuruilineum ex varijs circumferentijs compoſitum quarum altera alterius dupla ſit quadrare. Prop. 2.



ESto triangulum ſemicuruilineum ABCDE cuius circumferentia EDC ſit circuli dupli ipſius ABC. Sed EDC ſit octaua pars circumferentiæ ſui circuli GEDC, circuli vero ABC quarta. Aio triangulum ſemicuruilineum ABCDE rectilineo inueſtigari poſſe parem. Rem ita moliemur. Completa circumferentia CE, ſit CEG, & coniungatur AC, mox portionem CEG diuidatur per medium, & ſit diuiſionis linea EF, dico triangulum AFC ſemicuruilineo triangulo parem eſſe. Quoniam tota portio ABC æqualis eſt dimidiæ ECF, id propterea dempta ABC portione repoſita EFC ſemicuruilineum ABCE, abijt in triangulum rectilineum ACF.

At ſi circulares lineæ magis cohærebunt, vt circumferentiarum baſes introrſum ſe ſecent, eadem erit operatio, & demonſtratio, vt in prima propoſitione. Productis lineis portionis AC, & ſemiportionis EFC triangulum rectilineum AEFC ſemicuruilineo par erit. Quoniam ſpatia ipſarum portionum ABC, EFC æqualia ſunt, ablata interiacente portione DC, quod reliquum eſt ABCD ipſi EDCF æquale erit, addita vtrique areola AED, erit totum triangulum rectilineum AEFC toti ſemicuruilineo ABCDE æquale, nam quanta pars ex

demptione abijt, tota ex repositione substituta est.



Vel potest transpositis lineis alio modo triangulum semicuruilineum constitui sit circumferentia dupli CDE retro CBA ante, tunc ex puncto C. super basim AE cadat perpendicularis CF, & connectatur CA, & sic triangulum semicuruilineum ABCDE rectilineo FCA parem iri. Ratio in superiori.

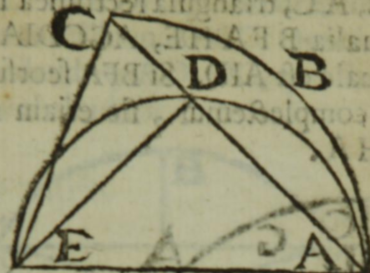
At si vt diximus ex varijs, & inæqualibus circumferentijs orbiculata triangula composita erunt, tunc mente concipiendum, si circulus duplus alteri sit, subdupli duæ circumferentiæ partes, vni dupli respondent, si quadrupli quatuor, & sic deinceps. Esto verbi gratia circuli dupli circumferentia EDC, & sit octaua suæ circumferentiæ pars respondet duobus octauis subdupli circuli ABC. Diuidatur ambiens linea ABC bifariam in B, & trahatur AB, BC, EC, & erunt duæ AB, BC portiones, vni EC æquales; & sic vna EDC, duas illas AB, BC absumet. Vnde si triangulum semicuruilineum duabus octauis circumferentiæ partibus decrescimus, AB, BC augemus vna EDC, & sic par pari referemus.

Alter Casus.

POtest & aliter euenire; sit triangulum semicuruilineum ABCED, & sit ABC quarta dupli circuli, & ADE semicirculus subdupli, docebimus quomodo possis rectilineũ triangulum æquale semicuruilineo facere. Trahantur ex puncto per medium circuli ADE vsque ad C, & sit linea ADC, & linea DE. Erit triangulum semicuruilineum ABCED

æquale

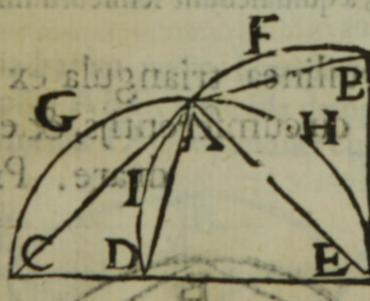
ęquale rectilineo DCE. Quoniam portio ABC est dupla ipsius AD per 19. primi nostri, & huic nempe portioni AD æqualis DE. dematur dimidia portio ABCD, addatur DE compar, remaneatq. communis areola DCEF, vtrique sic enim rectilineum



triangulum DCE æquale semicuruilineo ABCED, & sic excessus vnius alterius defectu rependetur. Sic & in alijs notis circumferentijs quadruplis quintuplis eodem Methodo vti poteris.

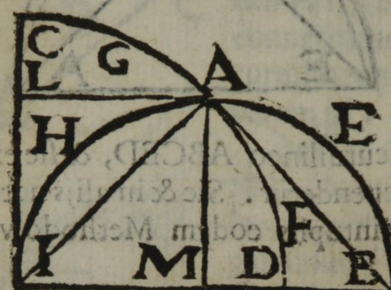
Semicuruilinea triangula ad verticem constituta ex eisdem, & æqualibus circumferentijs, vel ex æqualibus nota quadrare. Prop. 3.

SI duo semicirculosa triangula ad verticem constituta ex eisdem, & æqualibus circumferentijs fuerint ductis à vertice ad bases rectis lineis, erunt rectangula circulosis ęqualia. Si primam huius libri leges non secus esse inuenies, quā



diximus. Si acciderit, vt circumferentiæ eædem ad verticem sint inæquales, sed in id conueniant oportet, vt dextra interior sinistræ exteriori æqualis sit. Sint inæqualia triangula se inuicem decussantia BAE, ACD, segmenta sint æqualia, vt BFA, AID, & EHA, AGC, tunc protractis rectis BA, AD,

AE, AC, triangula rectilinea BAE, ADC, erunt circulosis æqualia BFAHE, AGCDIA. Quoniam segmentum BFA æquale est AID. Si BFA seorsum expellimus, & AID sua vice complectemur, sic etiam reijcimus AGC reponimus EHA.



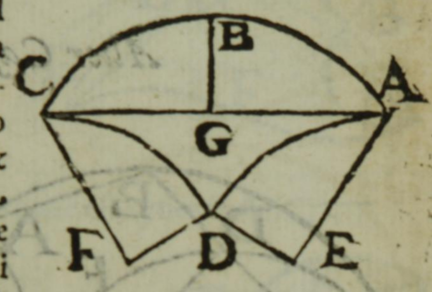
At si fuerint duo semicuruilinea triangula BE-AFD, & AGCIH constituta ad verticem A ex inæqualibus circũferentijs notis quarum DAC sit circulus duplus ipsius BAI. Trahantur duæ lineæ perpendiculares ex A ad CI. & sit AL, & AM ad BI. & binæ aliæ rectæ BA, AI, dico rectilinea triangula ALI, ABM, simul iuncta æqualia esse . Semicuruilineis BEAFD, CGAHI. Quoniam periferia DAC est circuli dupli quarta, & BAI subduplus semicirculus, duæ semiportiones AFDM, AGCL, absument duas portiones BEA, AHI. demptis igitur BEA, AGCL, repositisq. AHI. AEBM, rectilinea triangula BAM, LAI, æquiualebunt semicuruilineis iam dictis.

Curuilinea triangula ex eisdem & æqualibus circumferentijs, & ex varijs notis quadrare. Prop. 4.

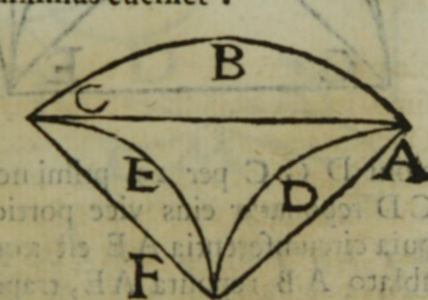
Esto curuilineum triãgulum ex tribus circumferentijs ABC, CD, DA, eiusdem curuis, sed ABC, dupla AD, DC constitutum quod quadrare intendimus. Dico protra-

ctis

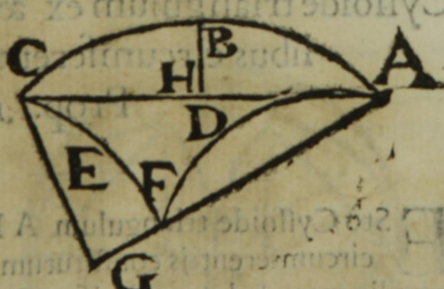
ctis æqualibus ſubtenſis AB, BC, CD, DA quadrilaterum, rectilineum ABCD, eſſe æquale curuilineo ABCD. Quoniam demendo portiones AB, BC, addendoq. AD, DC, quæ ſimul æqualia ſunt voti compos fies, vel aliud dicimus.



Poterimus alio modo id aſſequi. Protrahatur linea AC, & binas AE, ED, & lineas CF, FD, vt ſemiportio AED ſit æqualis ABG, & DCF, & ipſi BGC, nam duæ portiones dimidiatæ ADE, CDF æquiualent vni integræ ABC. Vna hac dempta, his additis quod diximus eueniet.



Eodem modo curuilinea triangula ex inæqualibus circumferentijs, ſed altera alterius exempli cauſa ſit dupla. Sit curuilineum triangulum ABCEFD ex inæqualibus circumferentijs, ſed ABC dupla ſit ADF, & FEC ſubtenſis lineis AC, AF, FC erit quadratum nempe binæ portiones ADF, EFC æquipollent ſimplici ABC, vnde illa dempta, his additis triangulum rectilineum FAC æquipollet curuilineo propoſito.



Poteſt contingere, vt triangulum conſtituatur ex varijs circumferentijs, & inæqualibus, vt FEC ſit dimidia ipſius ABC, & ipſa ABC dupla ipſius ADF, ſic facta ſemipor-

tio-

tione CFG, æquali BHC, & ſubtenſis A F portio A D F erit æqualis ABH. Vnde hac dempta, illis ſubditis triangulum rectilineum ACG erit æquale curuilineo ABCEFD.

Alter Caſus.

ESto curuilineũ triangulum ABCDFE propoſitum quadrãdum, & circumferentia circuli A B C ſit dupla E F D G C, diuidatur circumferentia E D C bifariam in D, & trahatur C D B erit ceratoide triãgulum B H C G D æquale portioni D G C per 19. primi noſtri. Vnde dempto B H G C D reponatur eius vice portio E F D æqualis D G C, & quia circumferentia A E eſt æqualis, & eadem ipſius A B, ablato A B repoſita A E, trapezuim rectilineum A B D E erit æquale propoſito curuilineo triangulo A B H C G D E F.

Cyſſoide triangulum ex æqualibus, & inæqualibus circumferentijs quadrare.

Prop. 5.

ESto Cyſſoide triangulum A F C ex tribus inæqualibus circumferentijs conſtitutum A B C, C D E, E F A curuilineum, & latera diuiſa, & æqualibus circumferentijs con-

constituta, vt AB, sit æqualis BC, & CD, ipsi DE, & EF ipsi FA, vnde tractis lineis rectis AC, CE, EA, & demptis tribus circumferentijs BC, DE, FA, & allijs tribus repositis AB, CD, EF, rectilineum triangulum ACE æquale est cyssoidi ABCDEF.

Sit quoque semicyssoide triangulum quadrandum ABC DEFGILMNO, ex varijs circulorum circumferentijs, sed tamen binis semper oppositis æqualibus constitutum videlicet GFE maioris circuli circumferentia, quam EDC, & EDC maior CBA, sed tamen GFE æqualis ONM, & EDC, ILM, & CBA, AHI, si à puncto A ad basim GO lineæ rectæ trahantur, totum assequeris, ratio pendet ex superiori.

Arbilonem quadrare. Prop. 6.

Esto arbilon AH ECDB quadrandum, quia portio AH est dupla AB, & AB est æqualis semiportionis BGD, ergo ablata ABH, & reposita

posita BGD, & ablata HCE reposita DCF, rectilineum GBHCF est æquale iam dicto arbilioni.

Potest & alio modo probari. semicirculus ABC est duplus semicirculi DBF, ergo vacuum ABDGFBC. est æquale semicirculo, dematur ex vtroq; portio DEF, DGF, ergo lunula DBFE est æqualis arbiloni DABGFBC, sed arbilon est æquale triangulo rectilineo DEF, ergo arbilon dictum triangulo DBF, est æquale.

Quadratum curuilineum quadrare.

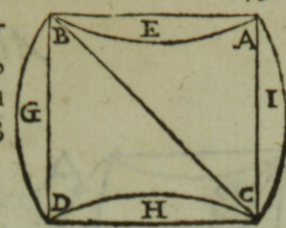
Prop. 8.

Esto quadratum curuilineum AFBGDFCE. trahantur quatuor lineæ ex angulis AB, BD, DC, CA, dico quadratum rectilineum ABCD curuilineo iam dicto præstabit. Quoniam sunt quatuor semicirculi æquales inuicem, tollantur AEC, BGD, reponantur AFB, CFD, sic rectilineum curuilineo æquale erit.

Alter Casus.

Potest & quadratum aliter fieri, ex quatuor etiam rectis angulis, vt diximus ABC. Quoniam portiones æqua-

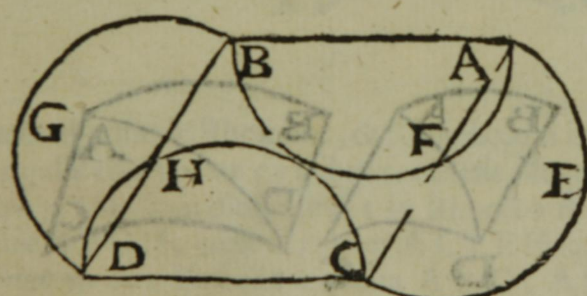
æquales ſunt, & ex æqualibus circulis, ablatis portionibus A I C, B G D, repoſitiſq. A E B, C H D rectilineum quadratum ABDC, curuilineo A E B G D H C I A æquipollebit.



Corollarium.

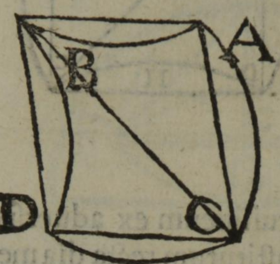
HInc patere poteſt quadratum curuilineum ex aduerſis, & conuerſis circumferentijs conſtitutum recta diameter bifariam ſecat, latus A B, lateri A C æquale eſt, & baſis B C communis vtrique, ergo triangulum C A B triangulo B D C æquale erit: igitur bifariam ſecat, & vtrumq. ex conuexo, & concauo æquali latere conſtat.

Rhombum curuilineum quadrare. Prop. 8.



ET Rhombus curuilineus A F B G D H C E quadrabitur, ductis ex angulis rectis lineis AB, BD, DC, CA, nam demptis ſemicirculis A E C, D B G, repeſitiſq. AFB, C H D, demptiſq. portionibus HDAF, rectilineum Rhombum curuilineo æquabitur.

Alter Casus.

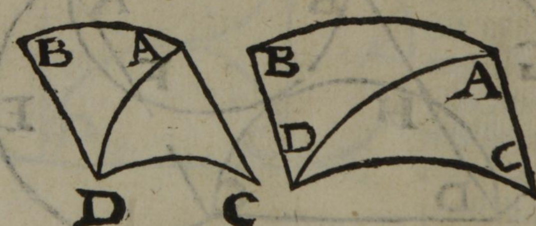


POtest esse Rhombus alio modo ex æqualibus circumferentijs AB, BD, DC, CA, & quoniam portiones æquales sunt, duabus demptis AC, CD, totidem repositis AB, BD erit rectilineo æqualis.

Corollarium.

EIusmodi etiam Rhombos recta dimetiens æqualiter secabit; nam hinc inde duo æqualia triangula constituent.

Rhombos, seu Rhomboides semicuruilineos quadrare. Prop. 9.

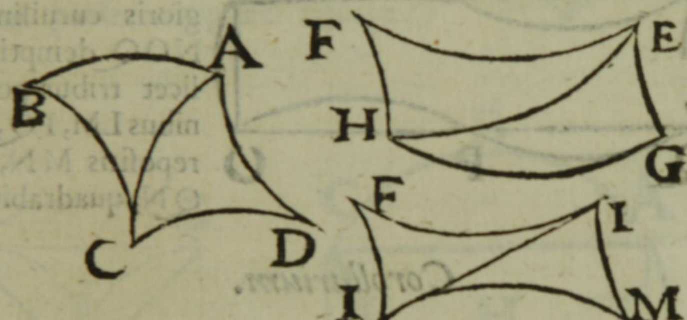


SEmicuruilineus Rhombus, & Rhomboides facilius quadrabitur: nam portione vna dempta, altera reposita, æquales erunt curuilinei rectilineis.

Corol-

Corollarium.

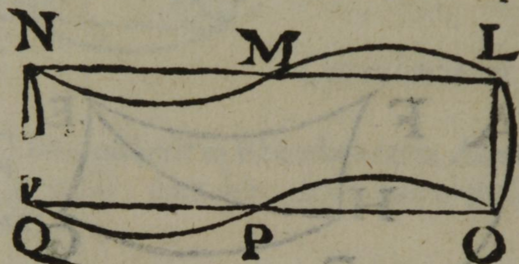
SEd in istis, qui ex isoscelibus triangulis semicuruilineis constituuntur curua diameter circumferentiæ æqualis, & eos bifariam secabit; nam in duo æqualia isoscelia triangula diuiduntur semicuruilinea, vt ABD, ADC.



Possunt & alio modo Rhombos, & Rhomboides in Isoscelibus triangulis constitutos ex tribus conuersis, & vna auersa diametro per mediam diuidere, vt in Rhombo A B C D. Rhomboide E F G H, cum diameter A C, E H eos bifariam diuidat in duo Isoscelia æqualia A B C, A C D, & E H G, E H F, & in Rhomboide ex quatuor conuersis constituto diameter recta etiam I L in duo semitriangula æqualia diuidit ex oppositis angulis ducta.

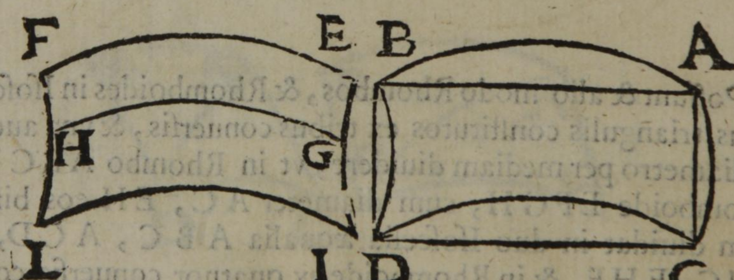
Altera parte curuilinea, & ſemicuruilinea quadrare. Prop. 10.

ALtera parte longiora quadrabis omnia, vt quadrata, duobus ſemper portionibus oppoſitis ablatis, & repoſitis, vt in ABCD.



Erit altera ſpecies altera parte longioris curuilinei LNOQ demptis ſcilicet tribus portionibus LM, PQ, OL, repoſitis MN, OP, QN, quadrabitur.

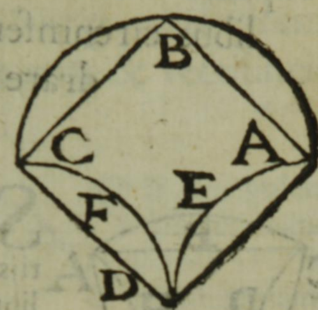
Corollarium.



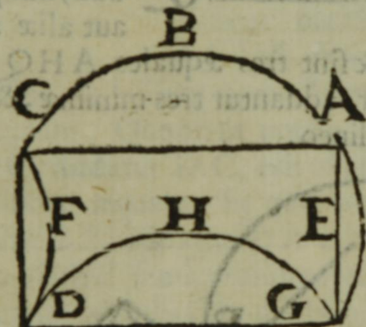
AT reliquas ſpecies diuides non dimetiente ex angulo ad angulum ducta, ſed per medium vtrinq. latera parallela, vt in EFIL dimetiens GH.

Pe-

Peleces quadrare. Prop. 11.



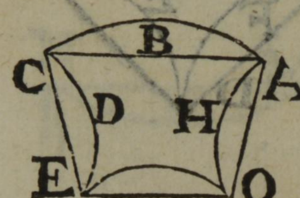
POssunt peleces multifariam variare ex varijs circulorum circumferentijs, & primo ex partibus, cuius partes circumferentiæ dimidij circuli A B C, aliæ duæ partes ex duabus quartis eiusdem circuli A E D, D F C, vt demptis illis, his repositis, rectilineum quadratum peleci æquale erit.



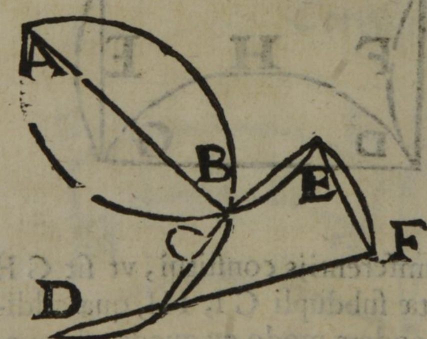
Potest & ex duplicis circumferentijs constitui, vt sit G H quarta dupli, duæ vero quartæ subdupli G I, I H, quæ additæ rependent ablatum G H, eodem modo ex quadrupla eueniet. Pelecis ex inæqualibus, sed eisdem circumferentijs, & varijs, vt Pelecis G E A B C F D H quadranda portio A B C sit æqualis G H D, & D F C, G E A, demantur A B C, reponantur G H D, D F C, & erit quadrilaterum rectilineum A C G D æquale supradictæ Peleci.

Trape-

Trapezia curuilinea ex æqualibus, & inæqualibus circumferentijs constituta quadrare. Prop. 12.



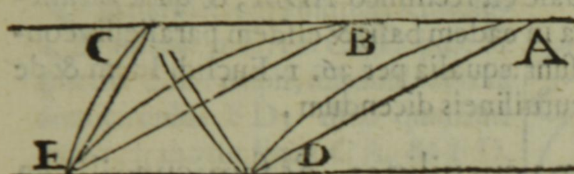
SInt Trapezia curuilinea ex quatuor, vel pluribus circumferentijs constituta, vel omnibus inæqualibus, vel tribus, aut duobus, dummodo inter eas ita conueniant, vt tres, duæ, aut plures possint, quantum vna, aut aliæ : nam sit portio A B C tripla, & sint tres æquales A H Q, Q F E, E D C, dematur maior, addantur tres minimæ, & coæquabitur rectilineum curuilineo.



At si Trapezium figuratum fuerit, vt ijsdẽ circumferentijs, & æqualibus constituatur, sed cũ alterũ altero longius sit, & quantum in altero deficit in altero superſit, minus addatur superfluo, & fiat æqua compensatio. A B duæ portiones demantur, addantur duobus alijs B C, C D, & quia pars E F superabit, deficit vero E B, huic addatur illius vice, sic rectilineum B E F D C B curuilineo æquabitur.

Trian-

Triangulum Isoscele curuilineum, & parallelogrammum semicuruilineum in eadem basi constituta, & eisdem parallelis, parallelogrammum triangulum duplum erit, & rectilineis æqualia erunt. Prop. *13*.

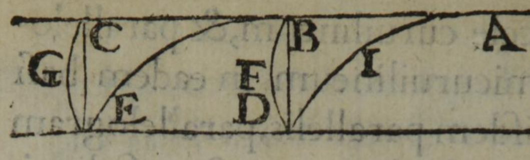


SIt triangulum Isoscele semicuruilineũ DCE, & parallelogrammum semicuruilineum ABDE in eisdem parallelis ACDE dico parallelogrammum in eadem basi, & eisdem circumferentijs constitutum esse triangulo duplum. Quoniam portio DC ipsi CE æqualis, dematur EC, addatur DC, erit triangulum rectilineum DCE curuilineo æquale. Et quia portio AD ipsi BE æqualis, dematur BE, addatur DA erit rectilineum parallelogrammum ABDE semicuruilineo æquale, sed rectilineum ABDE triangulo DCE duplum est; quia in eadem basi, & eisdem parallelis constituta per 41. 1. Eucl. ergo parallelogrammum rectilineum curuilineo triangulo duplum.

Parallelogramma semicuruilinea in eadem basi, & æquidistantibus circumferentijs constituta, & inter parallelas æqualia sunt. Prop. *14*.

SInt duo parallelogramma BFDCGE, & AIDBHE in eadem basi DE, & in eisdem parallelis rectis AC,

DE



D E constituta, dico inuicem esse æqualia: trahantur rectæ A D, B E, E C, quia portio BFD est equalis CGE dematur CGE, reponatur B F D, rectangulum parallelogrammum curuilineo æquale. Idem dicendum de altero parallelogrammo AIDBHE curuilineo æquale est rectilineo ADBF, & quia parallelogramma rectilinea in eadem basi, & eisdem parallellis constituta ad inuicem sunt æqualia per 36. 1. Euclid. Idem & de parallelogrammis curuilineis dicendum.

Parallelogramma curuilinea, & semicuruilinea cum æqualibus basibus,& eisdem circumferentijs,& eisdem parallelis constituta inuicem sunt æqualia.

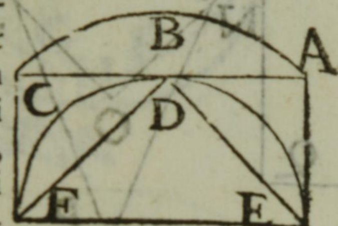
Prop. 15.

Sint duo parallelogramma semicuruilinea, & æquidistantibus circumferentijs AH, GB, & CF, DE, & æqualibus basibus constituta FE, GH, & in eisdem parallelis A D, H E dico esse inuicem æqualia, trahantur rectæ AH, BG, CF, DE, AF, B E, quia A H portio æqualis est B G, dempta AH reposita BG, erit rectilineum AHBG curuilineo æquale,& idem de alio CFDE, sed rectilineum AHBG curuilineo æquale,& idem de alio C F D E, sed rectilineum CFDE in eadem basi cum rectilineo ABFE, & ABFE in eadem cum A H B G, ergo inuicem æqualia per 26. 1. Euclid. ergo &c.

Paral-

Parallelogramma ſemicuruilinea in eiſdem parallelis conſtituta, & ex diuerſis circumferentijs videlicet duplis dari poſſunt rectilineis æqualia.

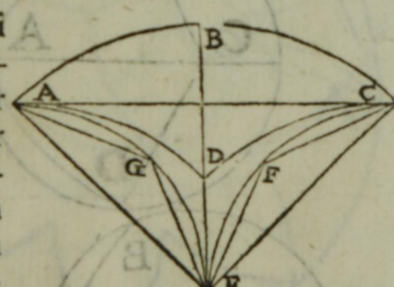
Prop. 16.



SIt parallelogrammum ſemicuruilineum E A B C F D E, & ſit portio CBA dupli, ſubdupli autem ſemicirculus F D, dico quadrari poſſe, trahatur linea C A, & F D, D E, quia duæ portiones ſubdupli F D, D E valent quantum vna ſubdupli CBA, dematur C B A, reponantur duæ ſubdupli F D, D E, rectilineum E A C F D valet quantum ſemicuruilineum.

Triangulum tricuſpidale quadrare.

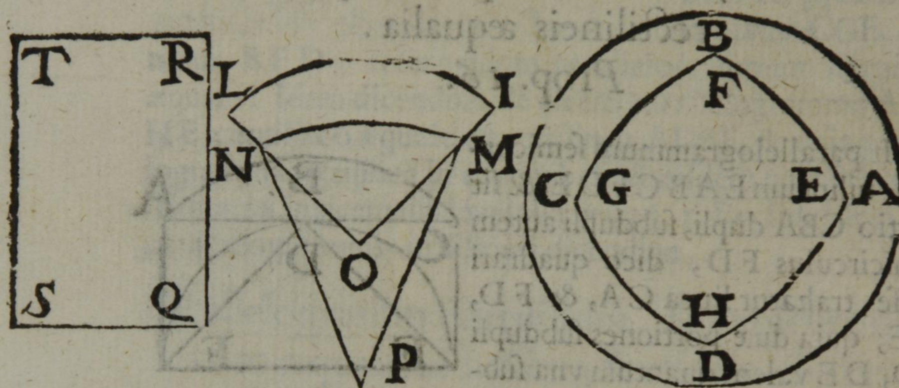
Prop. 17.



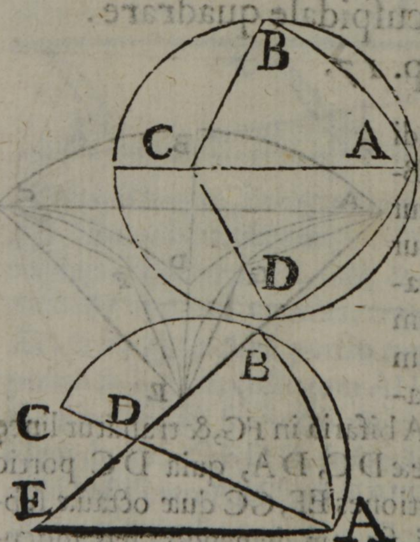
EX quarta noſtri ſecundi repræſentetur figura ABC F E G, à medio AC trahatur linea BE, & linea EB ſignetur in linea BE, linea CD ex eadem dupli circumferentia idem ex altera parte, dico triangulum tricuſpidale ADCFEGA quadrari Poſſe, diuidantur EC, EA bifariã in FG, & trahãtur lineę E F, F E, E G, G A, ſic, & lineæ D C, D A, quia D C portio eſt octaua pars ſui circuli, portiones EF, GC duæ octauæ ſubdupli æquipollent vnam dupli, ſic eam demendo, has adden-

do, trapezium EFCD rectilineum respondet curuilineo EFCD, idem de alia parte dicendum, & multifariam potest euenire.

Coronas quadrare. *Prop. 18.*



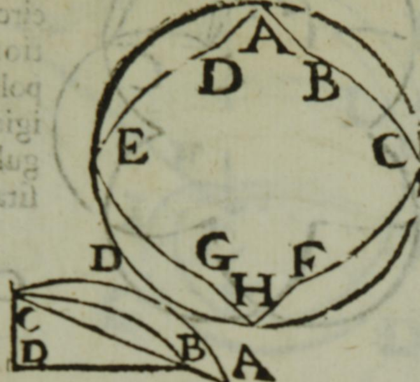
SIt quadranda Corona ABCDEFGH, pono eius quadrantem ILO, & ibi comparem octauã partem circuli dupli MNE, tollatur cõmune MNO, remanet tricuspidale triangulũ quadrilaterũ MONP æquale quartę parti coronę IMLN, quæ æqualis ABEF, quadruplicetur cuspidale triangulũ, & erit ipsius area QRST æqualis coronæ propositę.



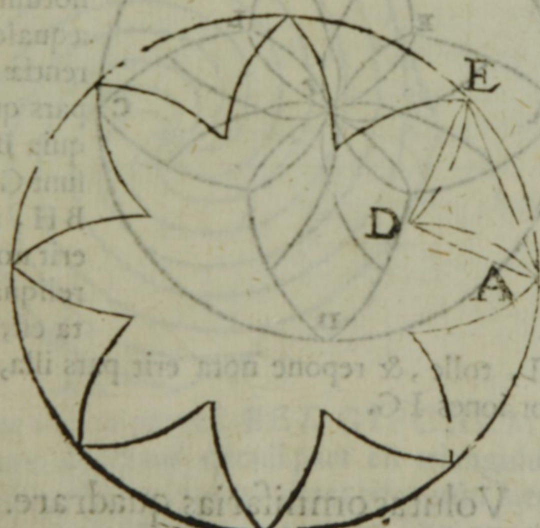
Eodem modo quarta pars semicirculi dupli ABE absumit dimidium circulũ ABC subduplum, tollatur commune triangulũ ABD, remanet ADE triangulum rectilineum æquale Lunæ AB, & circuli BDC, quo duplato æquipollet coronę ABCD.

Sit

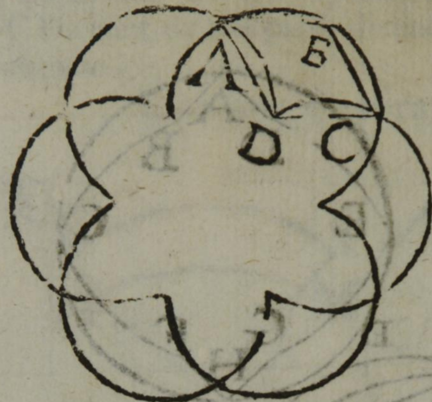
Sit portio ADCB, æquipollet dimidiæ duplæ i B C D, tollatur commune BC, remanet triãgulum BCD æquipollens semilunulæ A B-CD, sic quatuor triãgula BFGD absumunt coronam CBADEGHF.



Per quartam nostri secundi quadratur triangulum curuilineum A D E per rectilineum quadrangulum A B C D, sex igitur eiusmodi quadrãgula totam coronam absorbent.

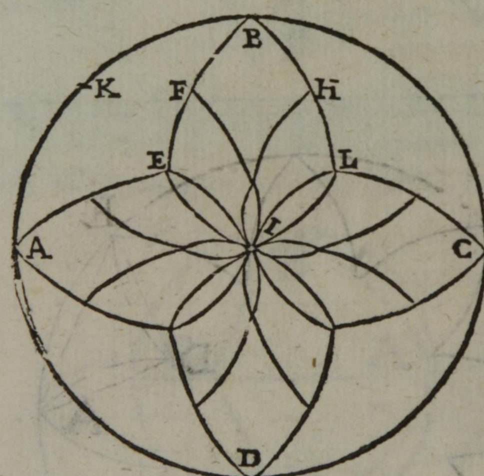


Eodem modo alia coronæ species quadratur, & sit eius pars AED, cuius maior circulus A E sit duplus AD,



& ſit A D octaua pars ſui circuli, & A E ſui circuli, duæ igitur portiones A D, D E æquipollent vni maiori: octo igitur eiuſmodi triangula reſpondent propoſitæ coronæ.

Corona ſemiquadranda.

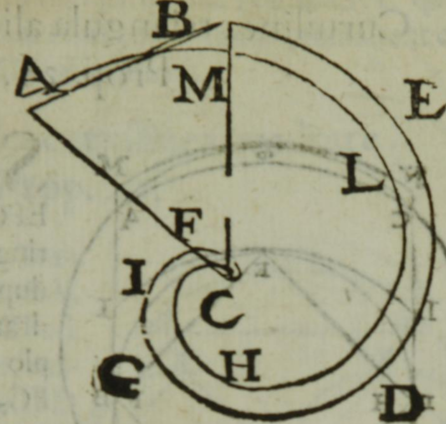


ESto circulus ABCD cuius quadrans ABI, triangulum ABE notum eſt, quia AE, EB æquales ſunt circumferentiæ A K, KB, reliqua pars quarta E F B H L I, quia B F, B H æquales ſunt G F, G H, tolle F B, B H, repone G F G H erit nota pars F B, H G, reliqua pars E F, I G nota eſt, quia æqualis FE, EI, tolle, & repone nota erit pars illa, remanent ergo 4. portiones I G.

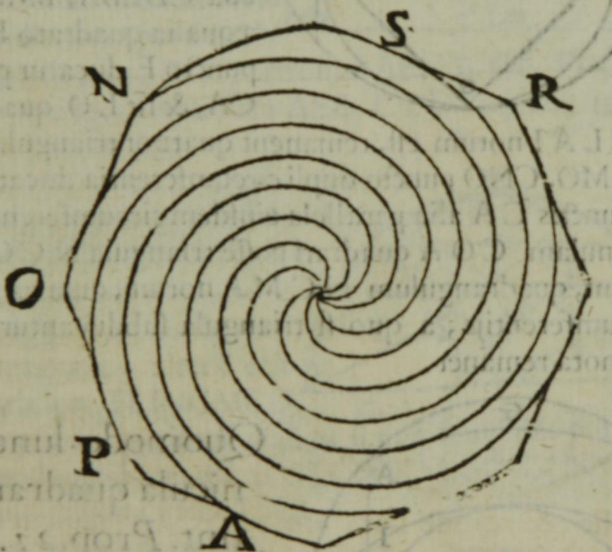
Volutas omnifarias quadrare. Prop. 19.

EST voluta figuræ ſpecies in cocleæ modum ſinuata, cuius ambiens perpetuo flexu ducitur binis in ſe quodammo-

dammodo recuruis, & refractis lineis.



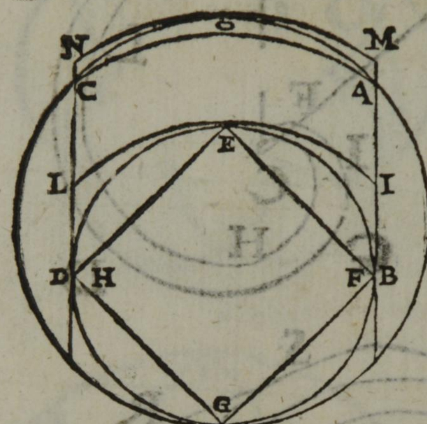
Propositum ergo sit quadrare volutam BEDGIFCHLMA scio hanc volutam octauam esse partem volutæ circuli NOPQRS, & omnes circuli volutæ non capiunt nisi octogoni aream, ergo vnaquæque octauam partem com-



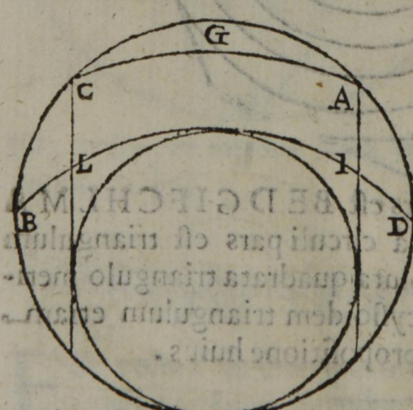
plectitur: vna igitur volutæ pars est BEDGIFCHLMA est octaua circuli pars, & octaua circuli pars est triangulum ABC, ergo tota proposita voluta quadrata triangulo metitur. Possumus, & hoc modo cyssoidem triangulum etiam quadrare, quod vidimus in 5. propositione huius.

Curui-

Curuilinea triangula aliqua quadrare. Prop. 20.



SIt circulus duplus AMNC, subduplus vero EFGH, seq. in puncto contingant G abscindantur à duplo duæ portiones quadrati CN, AM, & à subduplo quatuor quadrati E F, FG, GH, HE remanent vacua CDEBA, BMG, GNH æqualia quadrato E F, G H puncto E ducatur parallela CA, & sit L O quadrangulum C L A I notum est, remanent quatuor triangula L D E, EIB, AMO, CNO puncto dupli circumferentia ducatur MN, & ex punctis C A alia parallela eiusdem circumferentiæ CA, dico lunulam C O A quadrari posse triangula N C O, OAM nota sunt, quadrangulum N C M A notum, quia ex parallelis circumferentijs, à quo si triangula subducantur C O A lunula nota remanet.



Quomodo lunæ cornicula quadrari possint. Prop. 21.

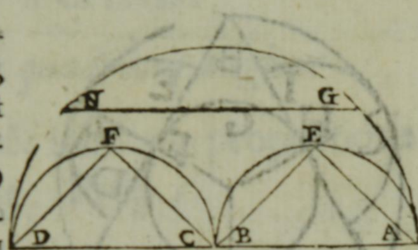
REmaneat superior descriptio, & in semicirculo B G D describatur dupli circumferentia BLID à punctis BD, lunula igitur

BG-

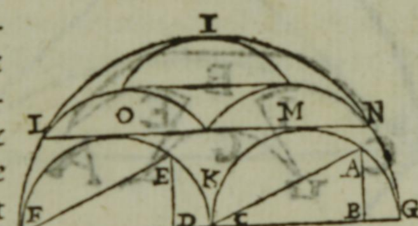
BGADILB nota eſt, lunula parua nota eſt CGA, quadrangulum CLAI notum etiam ex anteriori, remanent ergo corniculi CBL, AID etiam noti.

Trapezia multa curuilinea quadrare.

Prop. 22.



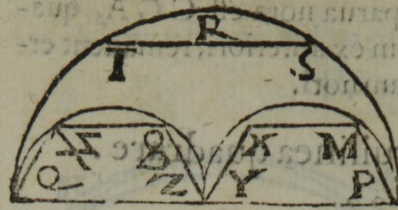
POſſumus quadrare Trapezium AGNDFCBEA, quia ſemicirculus AGND eſt quadruplus AEB per 20. noſtri, duo ſemicirculi AEB, CFD valent quantum arbilon AGNDCBA, dematur portio GN quarta circuli pars, & 4. portiones AE, EB, CF, FD, remanent duo triangula rectilinea AEB, CFD æqualia trapezio curuilineo iam dicto.



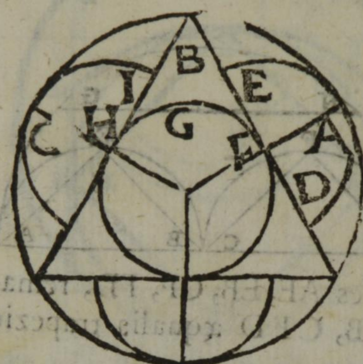
Eadem ratio erit in trigono. ſit trigoni portio LIN, & duo circuli FED, CAG, à quibus duæ portiones FE, CA, & duæ dimidiæ ED, AG, quæ vnam integrant, altera erit OIM, arbilon FLINGMCO valet duos ſemicirculos, à quibus ſi tres dempſeris portiones, tres item ab arbilone, vacua FLO, OKM, MNG, NMI, IOL valent duo trigona FED, CAB.

Eadem ratio erit in exagono, & trigono, nam in trigono in circulo GHILF, duo trigona APC, DEF, æquipollent vacuis GHM, MOC, OLF, HILONM, & in exagono PSRTQ,

duo



duo ſemiexagona P M X Y, & Z 8 & Q, valet vacuum PSTQYZ, in linea HL, tangens circumferentiam circulorum eſt latus trigoni æqui lateri per 12.13.Eucl.



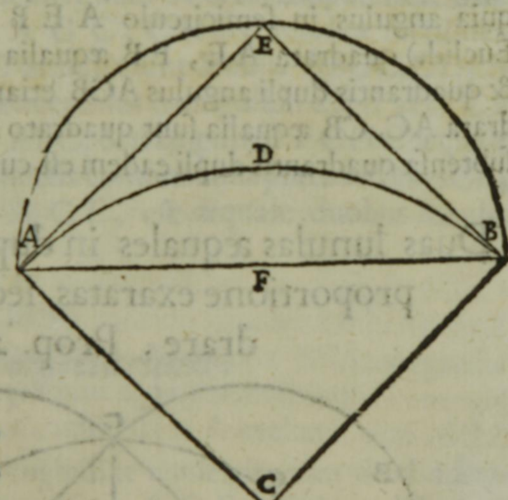
Circulus ABC, eſt quadruplus DAE, ergo pars tertia circuli A B C, quæ eſt ABC, eſt vnius circuli, & tertiæ partis, pars eius tertia eſt FGH, reliquum ergo erit corona ABCHGF dematur duo quadrantes circuli AEF, CHI, remanet vacuum AEFGHICBA, quantitatis dimidij circuli, & quia

octaua pars circuli maioris, valet quatuor minoris dematur portio B ex maiori, & 4. 8. ex minori LM, MN, NO, OP, ergo rectilineam LMNOP, valet trapeſium AEFGHICBA.

IO. BAPT. PORTAE NEAPOLITANI ELEMENTORVM CVRVILINEORVM Liber Tertius.

In quo de Circuli quadratura agitur.

Lunulam ex dupla, & ſubdupla proportione quadrare. Prop. 1.



DEſcripto duplis circuli quadrāte his characteribus diſtinguatur ADBC, cuius ſubtenſam AB, ſcinde bifariam, & punctus ſciſſionis adamuſſim medius F charactere ſortiatur, in quo circini pede infixo ex FA interuallo circum ducto ſemiambitum ſubdupli AEB ducito, aio triangulum rectilineum ABC interceptæ lunulæ areæ AEBD æqualem eſſe. In medio periferiæ ſubdupli E punctus inſtituendus, & ab vtraque circuli extremitate A B lineæ excurrant vſque ad E, ibique mutuo concurrant, quia dupli portio ADBF quarta ſui circuli pars valet quantum duæ ſubdupli portiones AE, EB, etiam ſui circuli pars quarta (per 20. primi noſtri) ideo

 ſub-

ſubductis portionibus A E, E B appoſita A D B (per primum axioma noſtri ſecundi libri) triangulum ABC valet quantum lunula AEBD, quod erat demonſtrandum.

Hyppocrates hoc aliter probat in primo Phyſicorum Ariſtotelis, quia quadrans dupli ADBC valet quantum ſemicirculus ſubdupli AEB, abſciſſa portione communi A D B, quæ inter vtrumque interiecta eſt, remanet trimetrum A B C æquale lunulæ AEBD, quadrandæ.

Conſectarium.

Ex hoc circumferentia dupli tranſibit ſemper per extremitates diametri ſubdupli, quod in alijs non euenit; quia angulus in ſemicirculo A E B rectus eſt (per 31. 3. Euclid.) quadrata A E, E B æqualia ſunt quadrato A B, & quadrantis dupli angulus ACB etiam rectus eſt, ergo quadrata AC, CB æqualia ſunt quadrato AB, ob id recta linea ſubtenſa quadrantis dupli eadem eſt cum diametro ſubdupli.

Duas lunulas æquales in dupla, & ſubdupla proportione exaratas ſeorſim quadrare. Prop. 2.

Eodem modo hoc commodiſſime abſoluemus. Eſto circulus

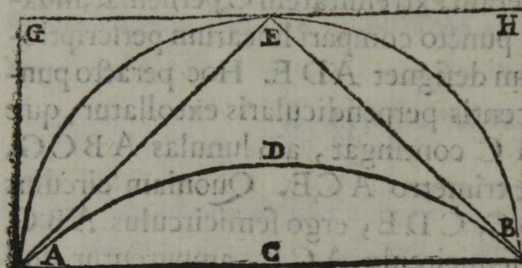
culus dupli A C E, & diametri extremitatibus A E binæ lineæ in medium circuli anfractum excurrant, & vbi mutuo contactu angulum efficiunt, illic C litera exaretur. Subtensæ AC, CE in medio ductu præcidantur, præfixis literis I K, mox assumpto circino ad rem commodè proferendam, pede vno in I infixo subsistente I A interuallo linea circumducatur vsque donec ad alteram extremitatem C perueniat, inuariatoq. circini pede K puncto compari linearum perscriptione circuli semianfractum designet A D E. Hoc peracto puncto F lineæ in plano iacentis perpendicularis extollatur, quæ in cuspide curuaturam C contingat, aio lunulas A B C G, C D E H, æquales esse trimetro A C E. Quoniam circulus A C E duplex est A B C, C D E, ergo semicirculus A B C, C D E æquales sunt semicirculo A C E, amputentur duæ communes portiones A G C, C H E, residua rectilinea triangula A C F, F C E æqualia sunt lunulis ABGC, CDEH vel modo, quo supra præcepimus triangulum dupli A G C F æquale est semicirculo ABC, & triangulum F C H E æquale semicirculo C D E, subductis communibus portionibus AGC, C H E, triangulum A C E, est æquale duobus lunulis A B G C, C D E H.

Consectarium.

ANtequam vltra progrediar consentaneum duxi adnotandum angulum rectum A C E bifariam dissectum in C ex (per 8. 6. Euclid.) E C, ad C A rationem habet vt E F ad F A, & sic triangulum C F E ad triangulum C A F (per primum 6. Euclid.) & quia æqualia sunt, lunulæ quoque æquales sunt.

Vacans ſpacium, quod intra figuras omnes notas interuenerit quadrare.

Prop. 3.



RECta linea AB dirigenda eſt, & ab eius vmbilici medio puncto C ſemiorbis circumducendus eſt A E B, completo ſemiorbi A C B, lunula complenda eſt more AEBD, mox laterales lineæ erigendæ ab extremitatibus AB ſunt, & medio eius puncto E ſuperior linea exaretur ipſi AB æquidiſtant, vt vltro, citroq. ſemicirculum tangant, etiam hiſce lateribus parallelogrammum exprimant AGHB, demum ab extremitatibus A B, medio puncto E tranſuerſas lineas ſortiatur A E, E B. Quoniam parallelogrammum GABH ſemicirculum continet, & eſt ſui quadrati dimidium, ſemicirculus lunulam continet AEBD, & lunula AEBD ſuo triangulo AEB æqualis eſt, & triangulum AEB ſui parallelogrammi dimidium eſt, ergo interceptæ areolæ AGE, EHB, ADB, quæ lunulam A B ambiunt, æquales ſunt ipſi lunulæ areolæ, ergo ſui amplexantis parallelogrammi dimidium ſunt.

Conſectarium.

EX hoc perſpicuum eſt lunulam ſui quadrati partem eſſe quartam; nam ſi lunula ſui obſepientis parallelogrammi dimidium eſt, & parallelogrammum ſui quadrati dimi-

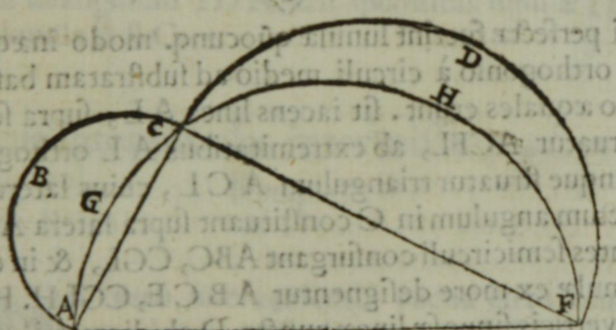
dimidium; igitur lunula ſui quadrati dimidium erit.

Vel ſi cuiuſcunque figuræ notæ vacua quadrare velimus modo ſupra cognito nota figura circumclaudatur, quam ſi à nota ſubtrahes, optato potieris ex ſecundo axiomate (ſecundi noſtri) ſit gratia exempli pelecis

HEIGOF ſæpienda ſuo parallelogrammo ABCD, quam ab ipſo ſeduces, ſic incluſæ areæ HAE, EBI, IGOD, OCHF reſiduum innoteſcet.

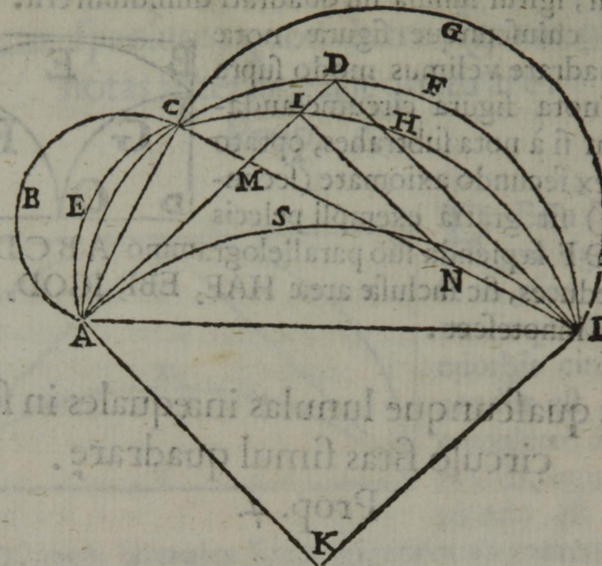
Duas quaſcunque lunulas inæquales in ſemicirculo ſitas ſimul quadrare.

Prop. 4.



TRiangulum rectilineum inſemicirculari linea definiri debet, quod tribus notis diſtinximus ACE, ſupra eius latera ſemicirculi incubabunt ABC, CDE, quibus congruens area adinuenienda eſt, inquam angulus ACE in ſemicirculo rectus eſt, & bini ſemicirculi ABC, CDE æquales ſunt ſemicirculo AGCHE ex eis, quæ ſupra habita ſunt, reiectis communibus portionibus AGC, CHE relictæ ſemilunulæ ABCG, CDEH reſiduo triangulo ACE rectilineo æquiparantur.

At



At si perfectæ fuerint lunulæ q̃uocunq. modo inæquales, semper orthogonio à circuli medio ad substratam basim deducendo æquales erunt. sit iacens linea A L, supra semicirculus struatur ACFL, ab extremitatibus A L orthogonium quodcunque struatur triangulum A C L, cuius laterum ductum rectum angulum in C constituant supra latera AC, CL, Ambientes semicirculi consurgant ABC, CGL, & in eis perfectæ lunulæ ex more designentur A B C E, CGLH. His peractis in verticis sinuosæ lineæ puncto D ab diametri extremitatibus A L duo latera consurgant, vt orthogonium triangulum ADL constituant, aio dictas perfectas lunulas ABCE, CGLH, in circulo ACDFL descriptum semper dicto triangulo ADL æquales esse: Quoniam lunulæ A B C E, CGLH æquales sunt triangulo orthgonio A D L semper ex secunda huius.

Potest & alia probandi ratio suscipi. Triangulo A D L super lineam AL descripto, aliud triangulum æquale infra lineam AL designetur, & sit ALK, & puncto K circini pede fixo,

fixo, altero vago in A collocato sinuosa linea ducatur vsque ad L. Quoniam duæ lunulæ perfectæ ABCE, CGLH æquales sunt vni lunulæ ASL (ex prima huius) & lunula ACDFLS est æqualis triangulo AKL, quod idem est cum triangulo ADL.

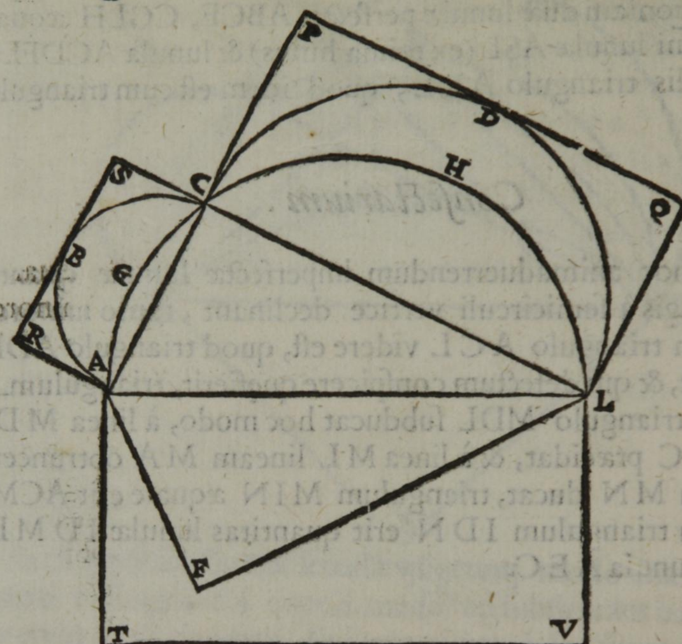
Consectarium.

EX hoc animaduertendum imperfectæ lunulæ quanto magis à semicirculi vertice declinant, tanto minores fieri, vt in triangulo ACL videre est, quod triangulo ADL minus est, & qui defectum conspicere quæsierit, triangulum ACM à triangulo MDL subducat hoc modo, à linea MD, linea MC præcidat, & à linea ML lineam MA obtruncet, & lineam MN ducat, triangulum MIN æquale erit ACM, reliquum triangulum IDN erit quantitas lunulæ IDML, dempla lunula AEC.

Vacua inter lunulas intermissa quadrare. Prop. 5.

AT vero interuenientia vacua circa lunulas si quadrare quæsieris, ita quadrabis. Esto minor lunula ABCG, maior CDLH imperamus semicuruilinea triangula inania inter illas, in rectilineas figuras reddere scilicet CPD, DQL, CHL, ARB, BSC, AGC, circumscribantur parallelogrammata tangentia earum ambientes lineas PQCL, ARSC, & fiat alterum parallelogrammum ex binis AL, TV, & sit ALTV, & fiat triangulum ACL æquale AFL (per 31. primi Euclid.) quibus ita dispositis inquam vacuum circa ATVLF æquale esse imperatis vacuis.

cuis. Quoniam triangulum A F L est æquale A C L ex

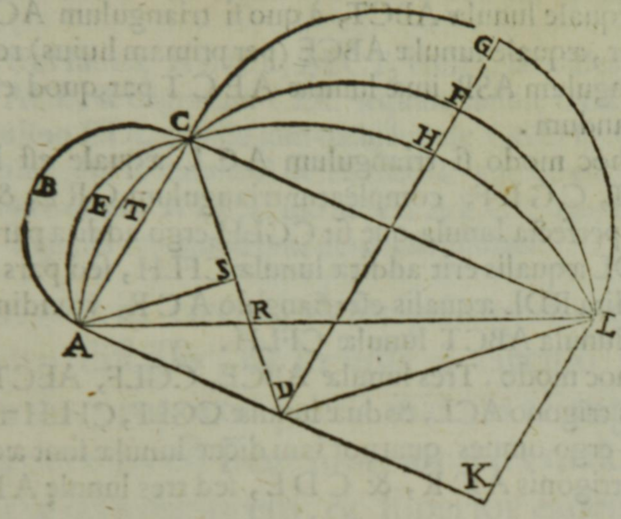


constitutione,& triangulum ACL est æquale lunulis CDLH, & ABCG, ergo si triangulum AFL à parallelogrammo ATLV abstuleris, reliquum vacuum ATVLF erit æquale interiectis vacuis iam recensitis.

Duas lunulas inæquales in semicirculi ambitu descriptas seorsum quadrare.

Prop. 6.

ESTO rectangulum triangulum ACL, cuius porrectius latus CL sit duplum exilioris AC, & circumferantur lunulę ex more,quibus adijce suas literas indices CGLF, & ABCT, mox parallelogrammum constituatur ex lateribus



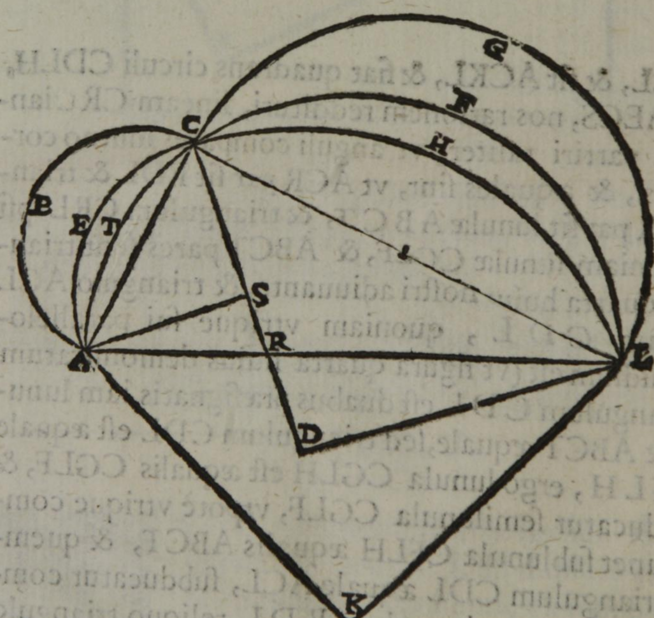
ribus AC, CL, & ſit ACKL, & fiat quadrans circuli CDLH, & ſubdupli AECS, nos rationem reddituri, lineam CR triangulum ACL partiri taliter, vt anguli compares mutuo correſpondentes, & æquales ſint, vt ACR par ſit RDL & triangulum A C R par ſit lunulæ A B C T, & triangulum CRL ipſi CGLF. Quoniam lunulæ CGLF, & ABCT pares ſunt triangulo ACL quarta huius noſtri adiuuante, & triangulo ACL par trimetrum C D L, quoniam vtrique ſui parallelogrammi dimidium eſt (vt figura quarta huius demonſtratum eſt) ergo triangulum C D L eſt duabus præſignatis iam lunulis CGLF, & ABCT æquale, ſed triangulum CDL eſt æquale lunulæ C G L H, ergo lunula CGLH eſt æqualis CGLF, & ABCT ſubducatur ſemilunula CGLF, vtpotè vtrique communis, remanet ſublunula CFLH æqualis ABCT, & quemadmodum triangulum CDL æquale ACL, ſubducatur commune C R L, reliquum triangulum R D L reliquo triangulo ACR æquale, lunularũ partium repręſentantia, ſequitur trian-

K gulum

gulum RDL esse æquale sublunulæ C F L H, & triangulum ACR æquale lunulæ ABCT, à quo si triangulum ACS subtrahatur, æquale lunulæ ABCE (per primam huius) remanet subtriangulum ASR imæ lunulæ A E C T par, quod erat demonstrandum.

Vel hoc modo si triangulum A C L æquale est lunulis A B C T, C G L F, compleatur triangulum C R L, & compleatur perfecta lunula, quę sit CGLH, ergo addita pars trianguli RDL æqualis erit additæ lunulæ CFLH, sed pars trianguli addita RDL æqualis est triangulo A C R, vt vidimus, & par est lunula ABCT lunulæ CFLH.

Vel hoc modo. Tres lunulæ ABCE, CGLF, AECT sunt æquales trigono ACL, & duæ lunulæ CGLF, CFLH trigono C D L, ergo omnes quatuor iam dictæ lunulæ sunt æquales duobus trigonis A C R, & C D L, sed tres lunulę A B C E,



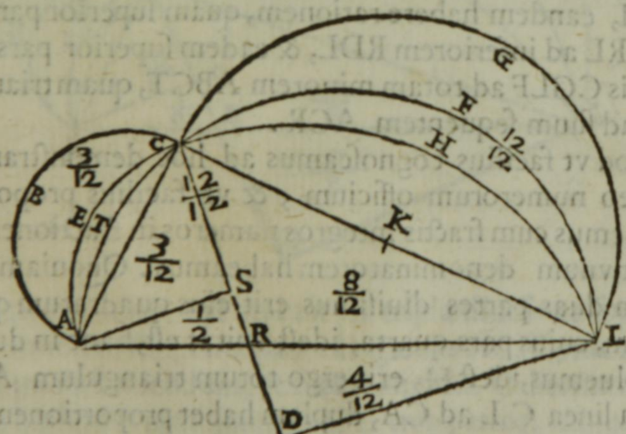
CGLF, LFCH sunt æquales trigono ALK, ergo reliqua

lunu-

lunula A E C T est æqualis trigono A S R, quod quęrebamus.

Vel tres lunulę A B C E, AECT, CGFL æquales sunt trigono ACL, & trigonum CDL æquale lunulę CGLH, tolle triangulum CDL ęquale iam dictę lunulę CGLH, reliquum triangulum ACR lunulis ABCE, AECT æquale est, tolle lunulam perfectam A B C E sub lunula A E C T sub triangulo A S R æqualis erit, quod erat demonstrandum.

Trianguli in circulo descripti angulo per medium discisso, & lunulis à circulo medio diuisis, proportio partis maioris trianguli ad minorem, est sicut superior pars maioris lunulæ ad inferiorem, & superior eadem pars ad minorem lunulam, & superior pars trianguli ad inferiorem sequitur eam suarum lunularum. Prop. 7.

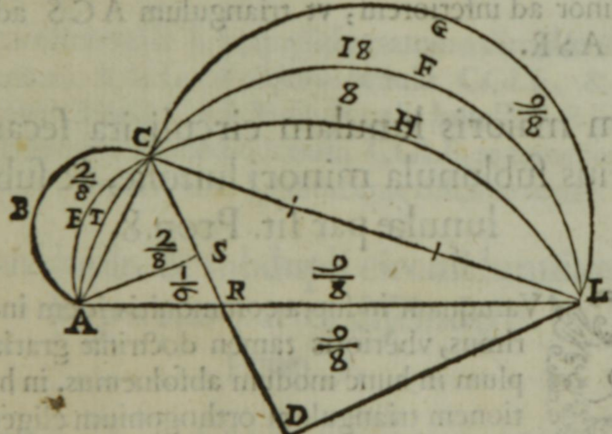


Priusquam ad diuersarum partium rationem lunularum

deſcendamus, admonitione dignum cenſemus, quod cum ab æqualitate duarum lunularum deſcendimus, quam (in ſecunda parte) vidimus, quantum maior creſcit, tantum altera decreſcit, & ex alterius defectione altera augumentũ ſuſcipit, & circulus ille, qui per medium vtriuſque percurrit, à maiori ſemicirculo ſubripit, & minori addit, ſed id non temerè, ſed certo ſe ſuperant exceſſu, vt ratio maioris ſuperioris lunulę ad inferiorem eadem ſit, quam maioris ſuperioris trianguli pars ad inferiorem, & ratio maioris ſuperioris lunulę ad totam minorem, vt ratio partis trianguli anterioris ad poſteriorem eandem ſequuntur analogiam, & vtraque vtriuſq; rationem ſequitur, vt exemplis patebit. Triangulum rectangulum ſtrue, cuius angulis appinges literas ACL, productius latus CL in duas partes, anguſtius in vnam partiri. In puncto bifariæ ſciſſionis lateris CL ſigna K, ex quo, & interuallo CK circinationis arcus exaretur, cui ſuas indices literas applicabis CGL, eodemq. ordine ſigna AC ſuum arcum delinea ABC, mox triangulum maioris circuli CGL conſtitues, & ſit CDL, & minoris ABCE, ſit ACS ſupra ſuccumbentem omnium baſim AL, medius circulus flectatur ACFL, dico lunulam ſuperiorem maioris circuli CGLF ad ſuam inferiorem CFLH, eandem habere rationem, quam ſuperior pars trianguli CRL ad inferiorem RDL, & eadem ſuperior pars lunulę maioris CGLF ad totam minorem ABCT, quam triangulum CRL ad ſuum ſequentem ACR.

Quod vt facilius cognoſcamus ad hoc demonſtrandum adhibeo numerorum officium, & vt facilius proportiones obſeruemus cum fractis integros numeros in fractiones ſoluamus, vt vnum denominatorem habeamus. Quoniam lineam CL in duas partes diuiſimus erit eius quadratum quatuor partium, cuius pars quarta, ideſt vnitas eſt, hanc in duodecimas ſoluemus, ideſt $\frac{12}{12}$, erit ergo totum triangulum ACL $\frac{12}{12}$, & quia linea CL ad CA, duplam habet proportionem, ita RL ad RA, & ſic triangulum CRL ad triangulum CAR, ergo trian-

triangulum CRL erit $\frac{8}{12}$, & triangulum ACR $\frac{4}{12}$. Ergo tota lunula perfecta CGLH $\frac{12}{12}$ erit ſuperior lunula maioris circuli CGLF cum duabus lunulis ABCT ſimul iunctæ ſunt $\frac{12}{12}$. Triãgulum CDL erat $\frac{12}{12}$, ſi ſuperior pars erat $\frac{8}{12}$ inferior RDL erit $\frac{4}{12}$, & quia tota perfecta lunula CGLH eſt $\frac{12}{12}$, vt proportio quadrupli ſeruetur, quam habet ad minorem perfectam ABCE $\frac{3}{12}$, & triangulum ACS erit ei par $\frac{3}{12}$, inferior ergo pars $\frac{1}{12}$, & cum nullus melior congruat ſublunularum partibus ſit ſublunula AECT $\frac{1}{12}$, ſic ſuperior pars maioris lunulæ $\frac{8}{12}$ inferior $\frac{4}{12}$. Vnde proportio trianguli ſuperioris CRL ad inferiorem BDL erit dupla, vt ſuperior maioris lunulæ pars CGLH ad inferiorem etiam dupla, ideſt $\frac{8}{12}$ ad $\frac{4}{12}$, & proportio ſuperioris lunulæ pars CGLF ad lunulas ABCT etiam dupla eſt, ſed ſuperior minor lunula ad inferiorem tripla eſt, vt $\frac{3}{12}$ ad $\frac{1}{12}$, ſic triangulum ſuperius ACS ad ASR, vt $\frac{3}{12}$ ad $\frac{1}{12}$.



Subijciatur aliud exemplum in tripla diuiſione ſupra lineam porrectam AL, circulum effingamus ACFL, mox in eo triangulum deſcribendum, vt rectus angulus C literam poſſideat, cuius latus vnum longius CL tres partes, minus AC, vnam ſortiatur in ſtruendis ibi commodè ſemicirculis CGL

maior,

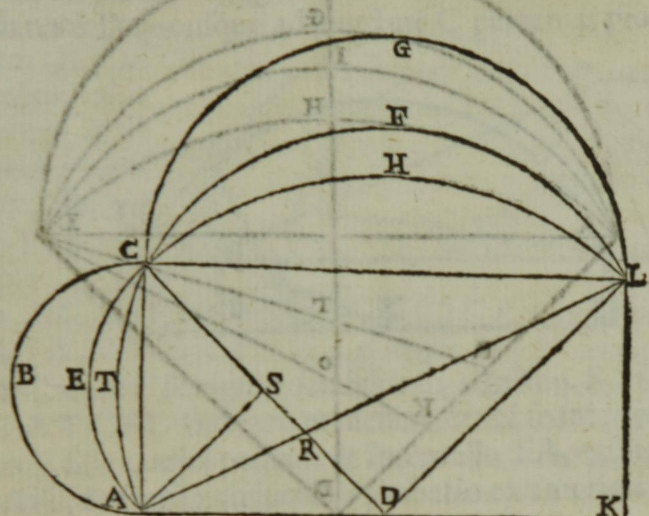
maior, ABC minor. Inde perfectæ lunulæ ex ordine ſubſignentur, ideſt trianguli C D L, C G L H, trianguli ACS, A B C E.

Triangulum ACL, quia linea eſt trium partium, area erit $\frac{12}{8}$, proportio C R L ad A C R eſt tripla, ob id triangulum CRL erit $\frac{9}{8}$, & triangulum ACR $\frac{3}{8}$, triangulum C D E latus trium eſt partium, quadrans eſt nouem partium, cuius quarta pars eſt $2\frac{1}{4}$, ideſt $\frac{18}{8}$ ſupra ſunt trianguli CRL $\frac{4}{8}$, ergo triangulum RDL erit $\frac{9}{8}$, tres lunulæ ABCE, AECT, CGLF eſt $\frac{12}{8}$ ſuperior maior ad duas minores eſt tripla, ergo lunula ſuperior eſt $\frac{9}{8}$, & duæ lunulæ ABCE, AECT eſt $\frac{3}{8}$, ſed lunula perfecta eſt $\frac{2}{8}$, ergo ſuperius triangulum C A S $\frac{2}{8}$ ſubditum reliqui erit $\frac{1}{8}$ & ſublunula reliqua $\frac{1}{8}$ inferior maior lunula, vt compleat numerum $\frac{18}{8}$ erit $\frac{9}{8}$, ergo proportio lunula ſuperior ad inferiorem, ideſt C G L F ad C F L H ſicut triangulum CRL ad RLD, & lunula E G L F ad lunulas ABCT, & ſuperior lunula minor ad inferiorem, vt triangulum A C S ad triangulum A S R.

Datam maioris lunulam circuli ita ſecare, vt eius ſublunula minori lunulæ, & ſublunulæ par ſit. Prop. 8.

Qvamquam in ſupra commonitis idem indicauerimus, vberioris tamen doctrinæ gratia exemplum in hunc modum abſoluemus. in hanc rationem triangulum orthogonium eligendum eſt ACL, cuius porrectius latus C L bifariam diſpeſcemus, ſupra lunulas ex more conſtituemus, & medium circulum ATCFL, & eis triangula ſubijciemus CDL, ACR, mox datis lineis A C, C L parallelogrammum conſtituatur C A L K, inquam ſublunulam CFLH, lunulis ABCT æqualem eſſe. Quoniam lunula CGLH æqualis eſt ſuo triangu-

lo CDL, & triangulum CDL æquale triangulo CAL, quia



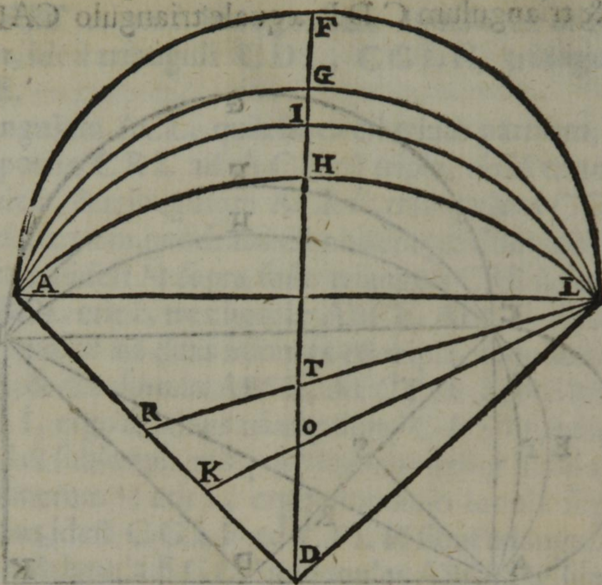
vtrumque eſt æquale ſuo parallelogrammo dimidio CALK, & triangulum ACL eſt æquale lunulæ CGLF, & lunulis ABCT, ergo lunula CFLH eſt æqualis lunulis ABCE, & AECT, tollatur de medio lunula CGLF, remanebit ſublunula CFLH æqualis ABCT, quod erat diſcutiendum.

Datam dupli, & ſubdupli circuli lunulam ad imperatas partes diſcindere.

Prop. 9.

ESto dupli, & ſubdupli multifariam ſcindenda lunula AFLH, cuius ſubtenſa AL, ſui compar triangulum inferius ſubſtituemus ADL à medio inflexi circuli vertice F vſq; ad trianguli aciem infernè poſitam D recto ductu deſcendat. In dextro trianguli latere AD futuræ lineæ deſignandæ ſunt lu-

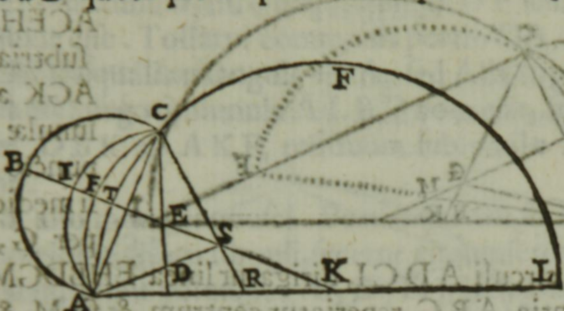
nulam



nulam diuisuræ in quotcunque partes volueris decem, vel septemdecim, pro nunc bifariam in R dispescito, & transuersam ad L deducito, si velis lunulæ mediam partem auferre, & vbi se lineæ cum diametri linea decussabunt, fige circini pedem fixum, & vagum alterum ad alterutrius diametri extremitatem A, vel L, arcum circumflecte A G L, nam lunula AFLG erit dimidium lunulæ. Vel si tertiam partem vis auferre, sit latera K in laterali tractu tertia pars ab K ad L lineam porrigito, & vbi FD lineam secat, pede circini stabili collocato, ac vago altero ad A extremum, arcum circumduces A I L, & tertiam lunulæ partem A I LH à duobus abscindet. Quoniam triangulum ADL per RL lineam bifariam dissectum est, superior trianguli pars ARL per superexaratam propositionem superiori lunulæ parti AFLG congruit, & ima trianguli pars RDL imæ lunulæ parti correspondet, & vtræq. partes sunt, ergo & lunulæ eis pares dissectæ sunt: Idem de tertia parte dicendum.

Eadem

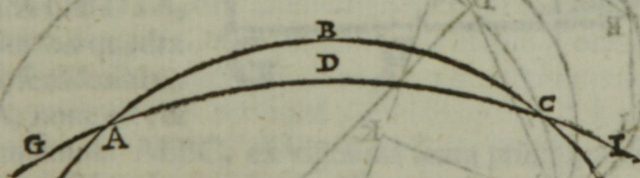
Eadem in parua lunula operaberis, nam si bifariam ABÇ lunulam vis partiri trianguli eius ABS latus, AS bifariam in D, & latus à D quousque ad punctum C perueniat protrahe-



mus, & lineam à B medio semicirculi, punctoq. S, vsque ad circuli A T C F L centrum perueniat, & vbi se interseçabunt puncto E siste circini pedem, & Interuallo EA, extende circulũ AIC, & diuisa erit lunula: probatio ex anteriori liquet.

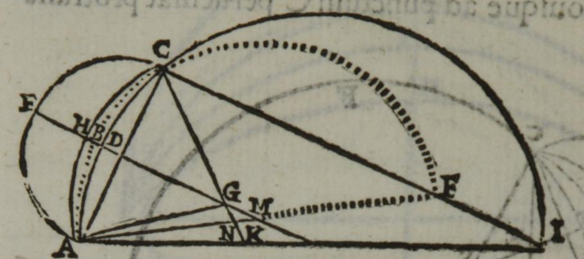
Datam quamcumque lunulam quadrare. Prop. 10.

Esto exposita quadranda lunula A B C D cuiuscunque ordinis, cui æquale oportet reperiri rectilineũ, maior cir-



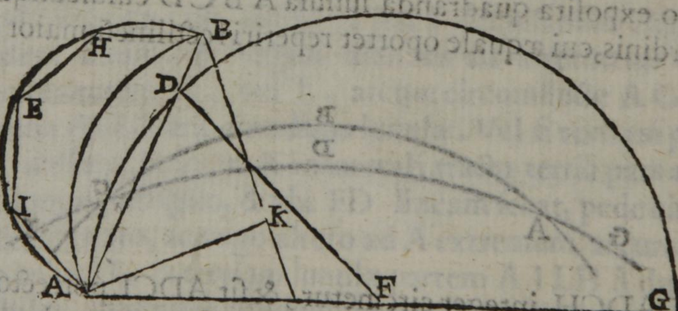
culus GADCH, integer circinetur, & sit ADCI porrecto suo diametro AI, & à puncto A superponatur præfata lunula ABC, & compleatur circulus A B C F cum suo diametro AF, extendaturq. linea à puncto A ad C, & sit AC, discindaturq. rectus angulus ACI per rectam C K, & super basim AC circinetur semicirculus AEC, & puncto G, basi AC, fiat quadrans

dupli, & sit AHCG, & trahatur A G, G C. Quoniam triangulum A C G est æquale lunulæ ACEH, remanet subtriangulnm AGK æquale sub lunulæ AHCD. à puncto semicirculi medio E, AEC per G, vsque ad



centrum circuli A D C I, dirigatur linea EHBDGML ex circumferentia A B C reperiatur centrum, & sit M, & trahatur A M, vsque ad F diametri finem ex supradictis, si à triangnlo AGK, quod lunulam AHCD refert, subducatur AGM, quod repręsentat lunulam A H C B, remanet subtriangulum ANK repręsentans sublunulam ABCD, quod erat edocendum.

Semilunulas ex nota ratione quadrare. Prop. III.



IN sola proportione dupli, & subdupli accidit, vt semidiameter circuli subdupli sit æqualis subtensæ quadrantis dupli, vt in prima Prop. huius vidimus: ideo in his perfectæ lunulæ, & alijs potius circuli semilunulæ dici possunt.

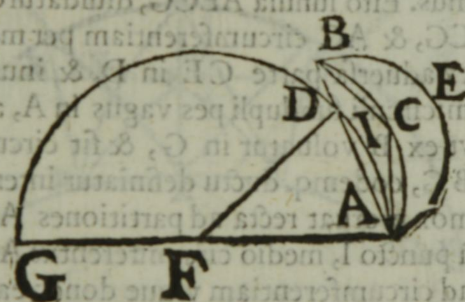
Esto

Esto circulus ADG quadrans semicirculi AEB, & quarta pars semicirculi ADG sit ADF, & diameter subdupli ADB transeat per punctum D, dico triquetrum ADF semicirculo AEDB æquale esse. Tollatur communis portio DA, remanet lunula AEBD, æqualis triangulo FDA, sed AEBL perfecta lunula nota est: ergo sublunula ALBD nota erit, subducito triangulum DBK ab AKF, residuum sublunulæ ALDB notum erit.

Potest & alio modo cognosci. Portio quadrupli AD valet quatuor portiones subquadrupli, secetur circumferentia AEB quadrifariam, & sint portiones AI, IE, EH, HB, amputentur portiones AI, IE, EH, HB, reponatur AB, trapezium rectilineum AIEHBD notum erit, & sic de cæteris.

Alio modo.

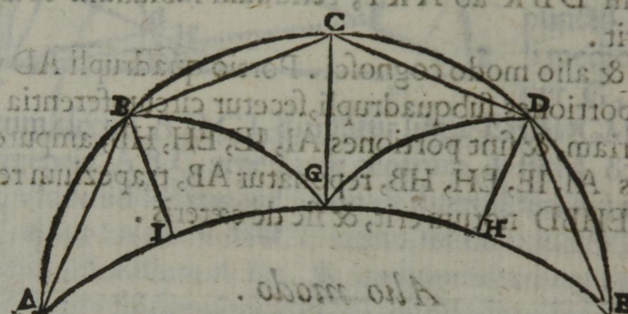
Sit semicirculus ADG, quadruplus ipsius AEB, & ipsius AEB, capiatur duplus, & sit circumferentia ACB, remaneat infra sublunula ACBDIA, quam volumus quadrare. Quia semilunula ACBDIA, nota est, & nota etiam lunula AEBC, ex vigesima sexta primi nostri, si notum à noto subtrahatur, quod reliquum est notum erit.



Possumus etiam proximè prædicto modo quadrare, quia portio AD, est dupla ipsius ACB, diuidatur ACB, in duas partes AC, CB, demantur hæ duæ portiones AC, CB, reponatur AD, rectilineum ACBDA, est æqualæ sublunulæ ACBDIA.

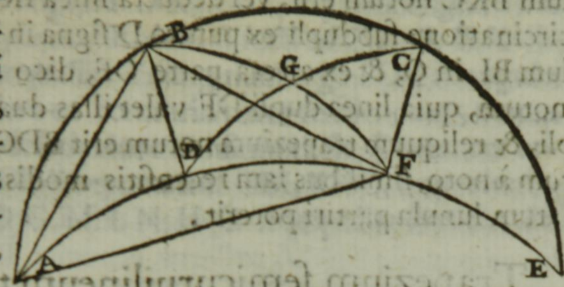
Lunulam per latum in quadrabiles partes diuidere. Prop. 12.

Nunc me conuertam ad quadrandas lunularum in latum partes, cum paulò ante per longum indicaueri-

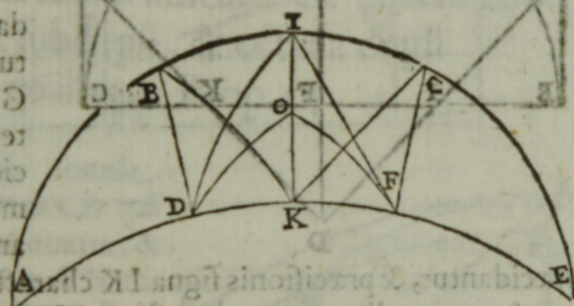


mus. Esto lunula AECG, diuidaturq. per medium per lineam CG, & AC circumferentiam per medium proscindes in B, & ex aduersa parte CE in D, & inuariata circini apertura semicirculi subdupli pes vagus in A, alter fixus sistatur taliter, vt ex B voluatur in G, & fit circumferentiæ circumductio BG, eodemq. ductu definiatur intercapedo GD similis BG, mox proruat recta ad partitiones AB, BC, CD, AG, GE, & à puncto I, medio circumferentiæ AG, erige lineam sursum, ad circumferentiam vsque donec eam in B tetigerit. Quoniam AB est æqualis BC, & portio AG dupli rependit duas AB, BG semidupli, dico illis AB, BG sublatis, hac AG reposita, rectilineum triangulum ABG notum erit, idem intelligendum de altera partitione GDE, reliquum triangulum BCDG notum erit, vt residuum notæ lunulæ. Vel amputatis portionibus BC, CD, repositis his BG, GD æquales, & eiusdem circumferentiæ, recensitum triangulum notum erit. Ex his triangula ABG, BCDG, GDE per medium transuersis diuisa lineis nota erunt, & tripartita erit lunula.

Vel



Vel circuli dupli tripartita partitione curuaturā constituas AD, DF, FE; Item subdupli AB, BC, CE; inuariataq. circini apertura intra duo puncta BF, DC mutuo inter se intercidentes arcus flectantur BF, DC, & vbi futurus est cōtactus illic pone G, aio triangulum ABF notum esse, quia AF, dupli circumferentia, duobus illis subdupli AB, BF respondet; vnde reiectis illis, hac reposita portione pensatur. Idem de alia parte DCE dicendum, & triangula BGD, CGF, BGC, DGF nota sunt, sic etiam triangulum BCF, & FCE dicendum.

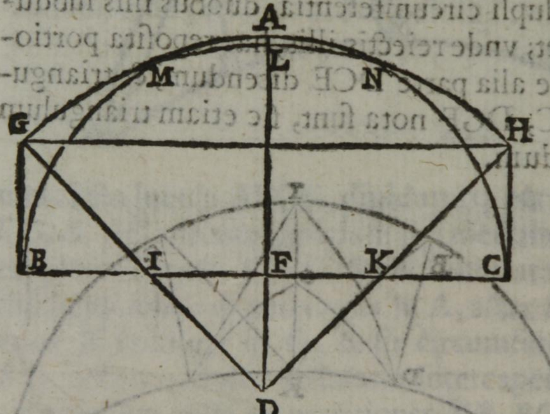


Remanente adhuc lunulę illæsa tripartitione ex puncto D fixo circini pede altero ad F signa in subduplo æqualē portionē in I, mox inuariata circini apertura, qua duplū circulū constituisti, siste circini pedem in altera extremitate lunulæ puta E, alterum ad D, & I conuertè, & signa circumferentiam dupli DI, & ab I ad F excurrat recta IF, dico triangulum DIF notum, quia circumferentia dupli DF est æqualis DI ex constitutione, ratione iam sæpius repetita, addendo, & demendo notum erit triangulum DIF, vel intercapedine BK circinetur BK circumferentia dupli, & recta ducatur KC, quia DF est compar BC, & DF æqualis ipsi BK, tolle portionem BC, repone BK triangu-

lum

lum BKC notum erit, vel deducta linea IK, & interuallo B I circinatione ſubdupli ex puncto D ſigna in linea IK interuallum BI, in O, & ex altera parte OF, dico triangulum DOF notum, quia linea dupli DF valet illas duas DO, OF ſubdupli, & reliquum trapezium notum erit BDOFC demendo notum à noto, ſimilibus iam recenſitis modis multipliciter perlatum lunula partiri poterit.

Trapezium ſemicuruilineum trapezio par extruere. Prop. 13.



Esto dupli quadrans DGLH, & hinc inde à terminis G H tranſuerſa linea ducenda eſt, quæ curuaturam ſpectet, & ſit GH, mox duo latera, quæ anguli faciem in D confirmant DG, DH, amuſſim in medio præcidantur, & præciſionis ſigna I K characteribus inſigniantur, & proruat linea per eadem ſigna BIKC ipſi GH parallela, & ex punctis G H ad perpendiculum demittantur ſupra B C lineæ G B, G H, & excurrentes in longum lineam BIKC bifariam diuidat, cuius diuiſionis terminus F, & centro F interuallo F B, circumducatur ſemicirculi forma ſubdupli B A C, quæ quadrantis circumferentiam in duobus punctis intercidet. Interciſionis puncta totidem literas ſortiantur M, N, & vniatur F D. Dico Trapezium ſemicuruilineum BGMLNHC par eſſe quadranti DGLH, ſed ad demonſtrationem accingamur. Quoniam F D æquidiſtat H C, cadit

inter

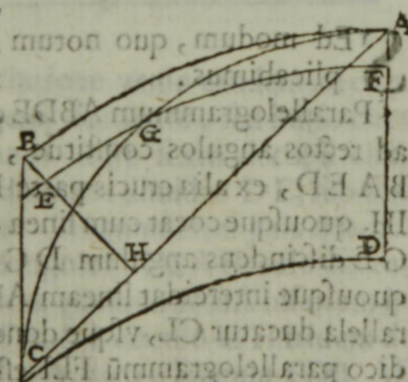
inter eas DH, ergo anguli FDK, KBC æquales anguli ad K contrapositi etiam pares. Itidem & recti ad FC, & HK linea ipsi KD etiam æqualis. Triangulum ergo FDK triangulo KHC compar. Idem ex contraria parte sentiendum, cum compari linearum descriptione confirmata sit. Demantur ergo triangula IFD, FDK reponantur GBI, KHC, trapezium semicuruilineum BGMLNHC æquipollet semicirculo BMANC.

Consectarium.

EX his apparet lunulam MANL æqualem esse duobus triangulis MGB, NHC, quoniam circuli pars extramittitur MANL, includantur trapezij partes NHC, MGH.

Triangulum semicuruilieum ex quarta semicirculi subdupli, & octaua dupli quadrare. Prop. 14.

SIt semiabscissa lunula AGCD, & linea CB ipsi AD parallela constituatur, & dupli circumferentia AB extremitate A ipsi CD parallela ducatur, donec ductum lineæ CB contingat in B, dico semicuruilineum triangulum ABCG quadrari posse. Quoniam AB ipsi CD Parallela, & eiusdem circumferētiæ, ergo quadrangulum BACD notum est, à quo si semilunula subducatur CGAD, remanet triangulum notum ABCG.

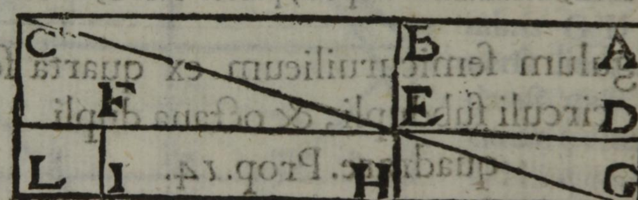


Vel

Vel quia lunula æqualis est AGF ipsi ECG ex præcedenti, parallelogrammum EBAF est notum, quia ex æqualibus circumferentijs; ergo & triangulum CBA notum est, quia vtrique additur commune GAF.

Vel triangulum semicuruilineum, quod paulò antè descripsimus ABCE remaneat, & ducatur linea CA portio semidupli CGA, & sit ABH semiportio dupli, ergo æquales, abscessus communis EHGA tollatur, remanet BEA æquale CEH, addatur vtrique communis B E C, ergo triangulum rectilineum BHC est æquale triangulo semicuruilineo BCGA.

Notum à noto subtrahere. Prop. 15.

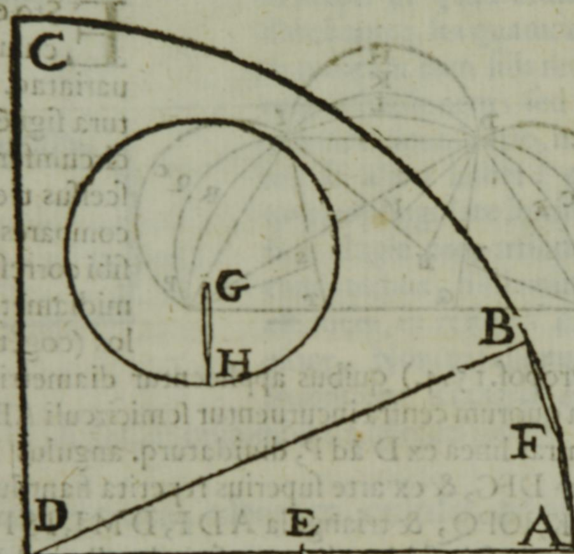


SEd modum, quo notum à noto subtrahatur nunc explicabimus.

Parallelogrammum ABDE circa decussatas lineas BH, EF ad rectos angulos constitue, & sit quantitas lunulæ datæ B A E D, ex alia crucis parte H I E F, elongeturq. parallela IH, quousque coeat cum linea AD in puncto G, mox linea G E discindens angulum D G H, ducatur per coniunctum E, quousque intercidat lineam AB, & ibi appone C, & ab C, parallela ducatur CL, vsque donec lineam GHI tetigerit in L, dico parallelogrammũ FLI esse quantitatem trianguli BAC, qua superatur à parallelogrammo FH, quoniam parallelogrammum BD est æquale parallelogrammo EL, dempto parallelogrammo FH, residuum erit FL, quod quærimus.

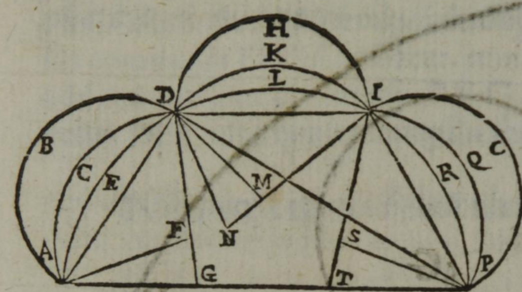
Circu-

Circulum quadrato proximum constituere. *Prop. 16.*



ABsoluta lunularum tractatione venio tandem ad circuli quadrationem ex ingenij facultate, sed initio circuli quadrationi approximabimur. Esto sexto decupli circuli quadrans A B C, & ex semidiametri dimidio D E, sub sexto decuplus circulus constituatur GH, amputetur pars quadrantis ADC, sitq. DBA, dico triangulum DBA circulo mutua parilitate constare secetur arcus quadrantis BA bifariam in F, connectanturq. rectè BF, FA, & à circulo G H itidem duæ illæ portiones quadrantis BF, FA, dico triangula FDB, ADF esse æqualia circulo, demptis duobus portionibus GH, æquales illis BF, FA interclusis: quod patet ex constructione.

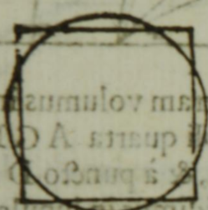
Datum circulum quadrare. Prop. 17.



ESto expoſitus circulus A D I P, inuariataq. circini apertura ſignetur in circuli circumferentia tres abſceſſus tres. n. recipiet compares, & coæquales ſibi correſpondentes ſemidiametro ſemicirculos (cogēte ad id Euclidis Propoſ. 15.4.) quibus applicentur diametri AD, DI, IP, ſupra quorum centra incuruentur ſemicirculi ABD, DHI, IOP, excurrat linea ex D ad P, diuidaturq. angulus A D P per lineam DFG, & ex arte ſuperius repetita fiant lunulæ ABDC, DHIK, IOPQ, & triangula A D F, D M I, I S P cum ſuis ſub triangulis ſuis ſublunulis correſpondentibus A F G, D N M, P S T.

Quoniam ſemicirculus A L P conſtat quatuor ſemicirculis æqualibus ſemidiametro, ſi tollantur tres portiones communes A E D, D L I, I R P, & tria triangula æqualia lunulis AFD, DMI, ISP, tollanturq. tres ſublunulæ tribus ſubtriangulis reſpondentes ACDE, DKIL, IQPR, cum ſuis ſubtriangulis reſpondentibus illis AFG, NDM, SPT, vacuum reliquum intercedens rectilineum, vel trapezium G D N M I S T valet quantum ſemicirculus quartus relictus X Y Z, hoc inane valet ſemicirculus X Y Z. Abſoluamus igitur circulum cum ſuo quadrato valente trapezium illud, & quadratus erit circulus.

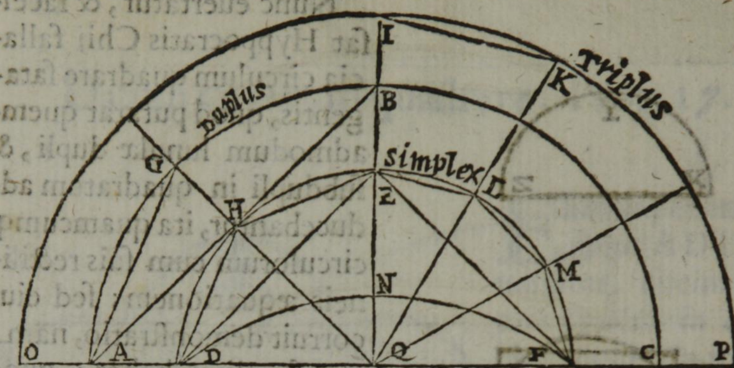
Nunc euertatur, & faceſſat Hyppocratis Chij fallacia circulum quadrare ſatagentis, quod putarat quemadmodum lunulæ dupli, & ſubdupli in quadratum adducebantur, ita quamcumq. circulorum cum ſuis rectilineis æquationem; ſed eius corruit demonſtratio, nam res ſe aliter habet: quod enim eſt ſingulare in circulis ſe in dupla proportione excreſcentibus, diſſentaneum eſt idem in reliquis exiſtimare. Nos (ni fallimur) ex inuentione trianguli A F G ſublunulæ aereæ A D C E reſpondentis, aſſecuti ſumus.



Data portione nota, alteram cuiuſq. proportionis ſibi comparem perueſtigare.

Prop. 18.

ESto linea O P futura baſis variorum circulorum, & ſemicirculus O I P triplus, A B C duplus, & D E F ſimplex, ſiue ſubduplus, & ſic de alijs alter ſupra alterum in quæſita ratione ſemper excreſcens, & à puncto Q, quod medium diametri poſſidet angulis vtrinque æqualibus aſcendat linea Q I ſemicirculus bifaria diuiſione diſcendens: mox ex centro Q circumferentiam AB æqualiter partiens vſque ad G, tranſmittatur, ex altera parte duæ aliæ circumferentiã I P, trifariam ſecantes coæquentur, & ſint Q K, Q M, & ſit



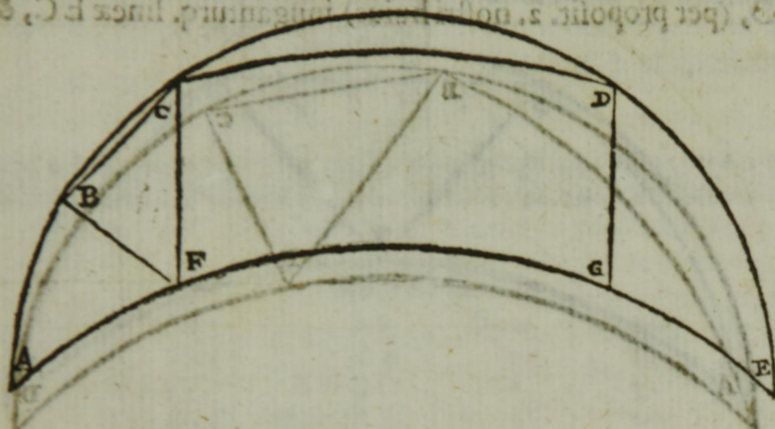
data simplicis circuli portio DE, alteram volumus in dupla proportione æqualem inuenire. Dupli quarta AGB discindatur bifariam, trahaturq. linea AG, & à puncto D ad E dupli portio subpingatur. Quoniam vidimus in lunula DEFN, portionem dupli quartæ circuli DNF valere duas quartas circuli subdupli, vel simplicis DHE, ELF, sed portio dupli DNF est æqualis AGB, quia eadem est dupli quarta. Ergo area conclusa in portipne dupli DNF valet duas quartas subdupli DHE, ELF, & portio octaua dupli AG valet duas octauas subdupli DH, HE. Idem dicendum de tripla, nam circulus OIKP est triplus subtripli, vel simplicis circuli DHELF, & par sexta semicirculi tripli IK, valet tres sextas subtripli circuli EL, LM, MF, & sic de alijs cuiuscunque quantitatis, & incognitæ mensuræ dicendum: nam semper rata, & iusta proportio erit.

Ex portionibus circulum quadrare. Prop. 19.

EX ea, quam modo exposuimus propositione dependet hæc portionum quadratio, quam ob oculos exponemus.

Esto proposita lunula ABCDE, ex qua (docente id 15. propos. nostri ante præteritam) minor lunula abscindatur,

quæ

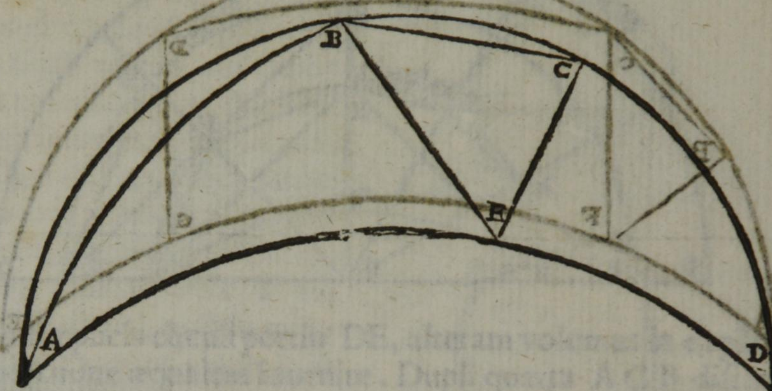


quæ ſit CD, ab cuius extremitatum terminis infernè deſcendant perpendiculares CF, DG. Quoniam quadrangulum ſemicuruilineum CFDG notum eſt ex eiſdem æqualibus circumferentijs dupli CD, GF, nota quoque eſt minor lunula CD, ſi à lunula ACDE ſubducatur quadrangulum notum CDGF, & lunula CD reſidua cornicula ACF, DCE nota erunt. Mox lineæ dupli AF ſubdupli compar AB reperiatur (per propoſitionem proximè præteritam) & erit trilaterum BFC, quod ſubtrahes à corniculo ABCF, & erit triangulum BCF notum. Duc lineam BC, & trilaterum rectilineum BCF notum ſubtrahe à ſemicuruilineo BCD noto, & area intra portionem BC concepta nota reſultabit.

Altera.

Aliam figuram extruendam non putamus, ſed ſuperiore lunula relicta. Eſto à puncto A vſque ad B duo puncta, dupli circumferentia flectatur, & ſit lunula minor AB, & æqualis AB, fiat linea AE dupli, & à puncto B ad E rectus tra-

trames ducatur. mox lineæ ED compar subdupli reperiatur CD, (per proposit. 2. nostri huius) iunganturq. lineæ EC, &

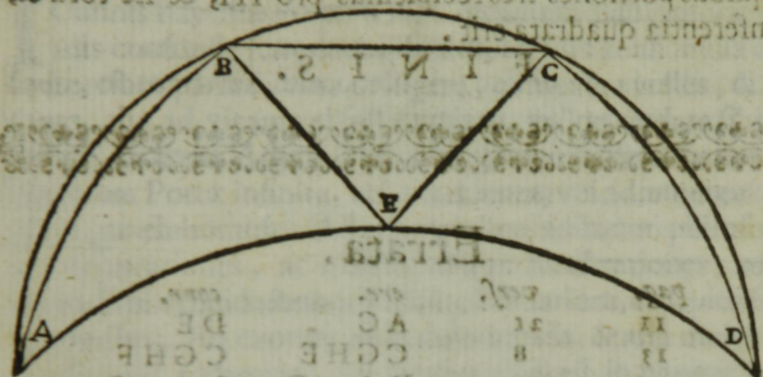


BC, recta lineam etiam connectatur. Quoniam AB, AE æquales, & eædem circumferentiæ sunt, si lineæ subtendantur arcubus AB, AE amputata portione AB, reposita suo loco AE notum erit triangulum semicuruilineum ABE, lunula AB nota est (ex propos. 15. presentis nostri) ergo lunulæ pars ABE nota erit, deme AB integram, innotescet residuum BCDE lineæ ED comparem reddidimus CD. Ergo corniculus ECD notus erit, deme à toto residuo BCDE innotescet trimetrum semicuruilineum BEC, appinge lineam BC à terminis BC, & triangulum rectilineum BCE notum erit, subducito à curuilineo, & portio BC nota erit.

Altera.

VEl in lunula ABCDE à puncto A vsque ad E, nota in subduplo, & sit AB, & ex altera parte CD, & à puncto A, vsque ad B appinge lineam dupli AB, & ex altera parte CD, mox connectè lineas rectas BE, EC, BC, quia AB, AE æquales sunt, sic CD, DE, ergo lunulæ AB, CD etiam notæ, tolle, quia remanet par medij BEC nota, à noto

to semicuruilineo BGE, tolle rectilineum BCE, remanet no-

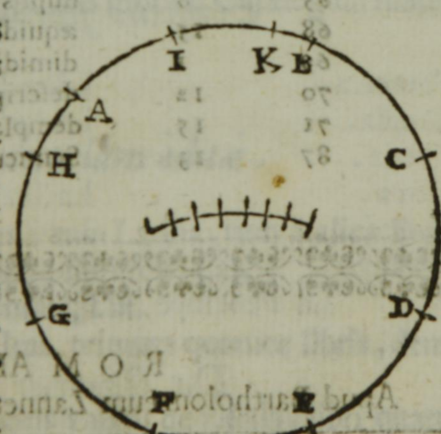


ta portio BC, sic & aliæ diuisiones imaginari possunt, & portiones quadrari.

Data vna portione nota, totam circumferentiam circuli quadrare.

Prop. 20.

SIt propositus circulus ABCDEFGH, & sit portio nota AB, nos hanc circumferentiam metiemur septies AB, BC, CD, DE, EF, FG, GH, supererit HA, qua metiemur bis AB idest AI, IK, & superierit KB, quæ portionem IK ter mensurabit. Ergo AB septies partiemur, quibus abscissionibus suas partes addemmus. A portione igitur AB subducemus octogonum



num rectilineum, reliquum in septem portiones diuidemus, ex quibus portiones tres recipiemus pro HI, & sic tota circumferentia quadrata erit.

FINIS.

Errata.

pag.	*vers.*	*err.*	*corr.*
11	21	AC	DE
13	8	CGHE	CGHF
20	9	D, & ex D	L, & ex L
23	1	vtrunque	vtcunque
23	18	AFG	AFC
23	21	FG	FB
30	1	AD	AB
32	5	hit	hic
48	15	Prop 8.	Prop 7.
49	17	repesitisq.	repositisq.
58	7	MNE	MNP
64	20	trapesium	trapezium
65	8	duplis	duplicis
68	15	æquidistant	æquidistans
69	1	dimidium	quarta pars.
70	12	descriptum	descriptas.
71	15	dempla	dempta
87	13	Semicuruilieum	Semicuruilineum

ROMAE,
Apud Bartholomæum Zannettum. M. DC. X.

SVPERIORVM PERMISSV.

Typographus amico Lectori.

IOannis Baptistæ Portæ V. Cl. ingenium Babylonicis palmis consimile semper existimaui, ex illis enim mella conficere, cibos parare, vina colligere, contexere vestes, & sexcenta alia ad vitam vel sustinendam, vel ornandam sibi cōparare dicuntur Assyrij. En tibi, amice Lector fæcundum ingenium Portæ infinita, vel ornamenta, vel adiumenta parturijt, ac elaborauit. Ad excolendum animum philosophicas disputationes, ac mathematicas lucubrationes; ad recreandum reficiendumq. Villam, Pomarium, & lepidissimas Comedias. Ad exornandum Admiranda, & alia multiplicis eruditionis volumina. Vno verbo nihil est in naturæ maiestate repositum, Nihil in huius vniuersi luce versatur, quod tibi Porta non suppeditet. Plerisque iam olim frui contigit, multa propediem expecta, quæ nobis omni disciplinarum genere excultus, ac dignus longiore fæliciore q. æuo Comes Anastasius de Philijs Lyncæus, & Portæ ipsi, quo cum plurima de litteris contulit, pernecessarius, amantissime impertiuit. Optandum intereà est. vt Porta diutius sibi, tibi, Reipublice viuat. Vt autem vno oculorum aspectu omnes magni viri lucubrationes agnoscas illorum Catalogum subtexere visum est.

In lucem iam editæ.

Physiognomonia Humana tum Latina, tum Italica lingua.
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Phytognomonicæ, libri octo, Lat.
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De Curuilineis, libri duo primum, cui additus tertius liber de Quadratura Circuli. Lat.
Interpretatio primi Almagesti cum Comm. Theonis Lat.
De munitione, libri tres, Lat.
Pneumaticorum, libri tres, Lat. Italicè spiritali: cioè d'inalzar acque per forza d'aria.
De transmutationibus aeris, libri quatuor, Lat.
De Distillatione, libri nouem, Lat.
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I ſimili.	
La notte.	
Il fallito.	Comedie.
La Strega.	
L'Alchimiſta.	
La Bufalaria.	

Cinque Comedie d'vna fauola ſola con le medeſime Perſone, e la prima è argomento di ſe, & di tutte; la ſeconda è proteſi di ſe & di tutte, con la peripatia per ſe, e tutte; la quinta è la Cataſtrofe per ſe, & tutte inſieme.

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CB